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FINAL REPORT

DESIGN CRITERIA FOR SPACE IN DWELLINGS

HHFA PROJECT O-T-37

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This material is based upon work conducted under Housing and Home Finance Agency's research project O-T-37 under contract by the University of Illinois Small Homes Council. The substance of this research is dedicated to the public. The accuracy of all statements or interpretations is solely the responsibility of the University.

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INTRODUCTION

This publication constitutes the third and final report of a study carried on as the HHFA PROJECT, SPACE DESIGN CRITERIA (O-T-37). Previous portions submitted are:

HOUSING LIKES AND DISLIKES
With Special Reference to Space Use

LIVABILITY SURVEY OF STAFF HOUSES
at the University of Illinois

The purpose of the Space Design Criteria project* is to establish sound design criteria of size and livability for dwellings in terms of general, regional, cultural, and income-group requirements. It was specified that these criteria should be concerned with space requirements for family activities, storage, furniture and equipment; the relationship of separate room spaces to other spaces; and the arrangement of essential furnishings and equipment in each room space.

(*) Article I of Contract, Section B, Purpose of Work: Modes of family living have changed radically in the last generation, but most houses and apartments built in recent years fail to provide sufficiently in their design for these changes. This is due to a lack of basic knowledge on present family activities and needs relative to dwellings.

Today's average family lives differently for many reasons. Its size is smaller; it is differently composed from an age standpoint. It uses different types and sizes of furniture and other possessions. It uses more labor-saving household equipment. Its members have more leisure time, and there are more ways to use it. It differs economically and, consequently, socially from the average family of previous periods.

But beyond these general apparent differences, little is known about the specific way in which families of various income and social groups live, and what their dwelling requirements are. Research leading to factual data that can be used by the designer, builder, and real estate developer is needed, if better and less costly dwellings are to be built. These data also are needed by housing agencies, building code officials, and private lending institutions for establishing realistic standards and procedures and judging long-term financial risks.

Most past research has consisted either of field surveys of existing housing or of design analyses resulting in assumedly better plans. Both activities are useful but have great limitations when performed independently by separate groups. Surveys observe and describe how families adapt themselves to their present dwellings but provide scant data on the kind of dwelling that might better meet these families' needs.

THE TEST-DWELLING PROGRAM

The third phase of the study required the construction and the operation of a temporary test dwelling (or "Space Laboratory") which could be used to determine reactions of families to a number of different house plans.

Early studies in the use of space in dwellings showed that very few, if any, families had an adequate opportunity to test their own reactions to various types of house arrangements. While it is true that most persons are able to express a preference between two given features--for example, a house with or without a basement--the validity of this preference is somewhat in doubt unless the person has actually lived with both of the features. For this reason, it was considered desirable to build a test dwelling in which a test family could be subjected to a number of house plans within a short period of time.

The Test Dwelling

The design and the construction of the test dwelling or space laboratory were based on the idea that complete changes in plan should be easy to make in a short time. Complete flexibility was desired, and, at the same time, it was felt that the laboratory should have the character of a residence.

The basic dimensions of the test dwelling used in this study are 24' x 36'. The entire roof structure and the ceiling of the laboratory are supported on perimeter columns with a plywood girder carrying the ridge of the roof.

The exterior walls do not carry any load. They are panelized and can be moved readily. For the most part, window panels are exchangeable with solid panels, thus simplifying the rearrangement of the exterior walls. Wall panels, window panels, and doors are hung from nailer posts which may be inserted at any point around the perimeter of the house.

On the interior there are no structural walls. Partitions are of 1-1/2 inch fiberboard or consist of prefabricated units such as closet units, bookcases, etc.

(Footnote Continued from Previous Page)

New designs may be better than those in current use, depending on the designer's knowledge and concern with family needs, but there is no way of determining the manner or degree of improvement. The only way this could be checked would be by observation and study of the house in use by the occupants.

The present project is devised to avoid these traditional deficiencies insofar as possible through the integration of the three essential parts of this type of research. The project starts with field surveys, proceeds to develop improved architectural designs on the basis of these findings, and ends by testing the livability and economy of living units arranged in the temporary Space Laboratory especially for this purpose.

The water-closet and lavatory in the bathroom are mounted on wall panels to facilitate their movement; similarly, the bathtub is mounted on a platform put on casters. Hot- and cold-water supply lines to the fixtures are of flexible copper tubing which can be removed and changed readily. The outlets of the fixtures are connected to a permanent drainage line by means of rubber hose which allows for flexibility in the arrangement of the bathroom and the kitchen.

The warm-air heating system is a small diameter duct system which again can be changed quite simply. Surface raceways are used for the electrical wiring.

The house has approximately a half basement. The heating plant and the water heater are located in this basement. The house has been tested as a house with a basement and as a house without a basement. When the house is considered to be a basementless house, a space sufficient for the installation of the water heater and furnace unit is blocked off on the main floor.

During the process of the tests, a garage was built on the site of the laboratory. This garage is 12' x 20', thus providing a certain amount of storage not otherwise available.

Because of the flexibility in construction, it was possible to make changes in floor plans in 2-1/2 to 4-1/2 days, depending on the extent of rearrangement.

The Test Families

Specifications for the test families were established as follows:

- Income and education - No definite requirements, but to be reasonably representative of the average family.
- Parents - In age-group of early thirties; mother not to be employed outside the home.
- Children - First child of school age, second child of opposite sex and of pre-school age.

A blind advertisement was inserted in the local newspaper stating the availability of the house and the qualifications of the family. On the basis of the applications and interviews with the University Space Utilization Committee, the families were selected. The committee tried to select families interested in building in order to assure interest in the research work.

TEST PROCEDURE

Each family lived in the test dwelling for a period of six months. Every month during the occupancies of the first two test families, the floor plan of the dwelling was changed.

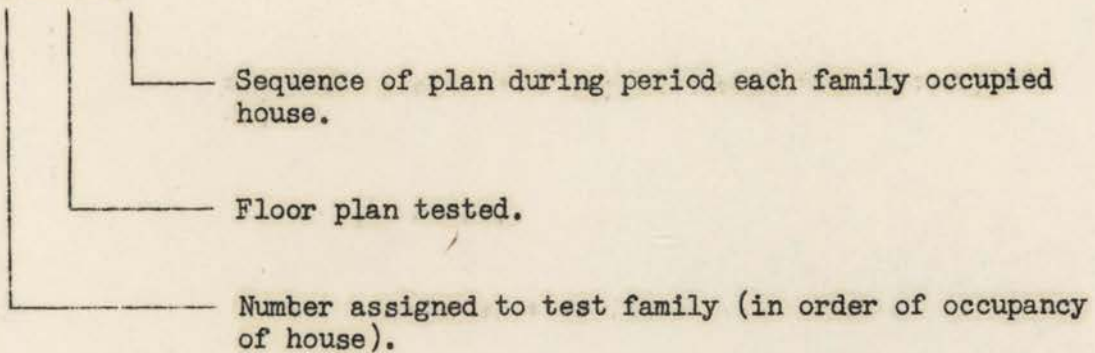
During the occupancy of Family III, only three plans were tested, each plan being in effect for approximately two months.

The plan used in the last test period of each family's occupancy was a plan proposed by the family and represented the house the family thought they would like.

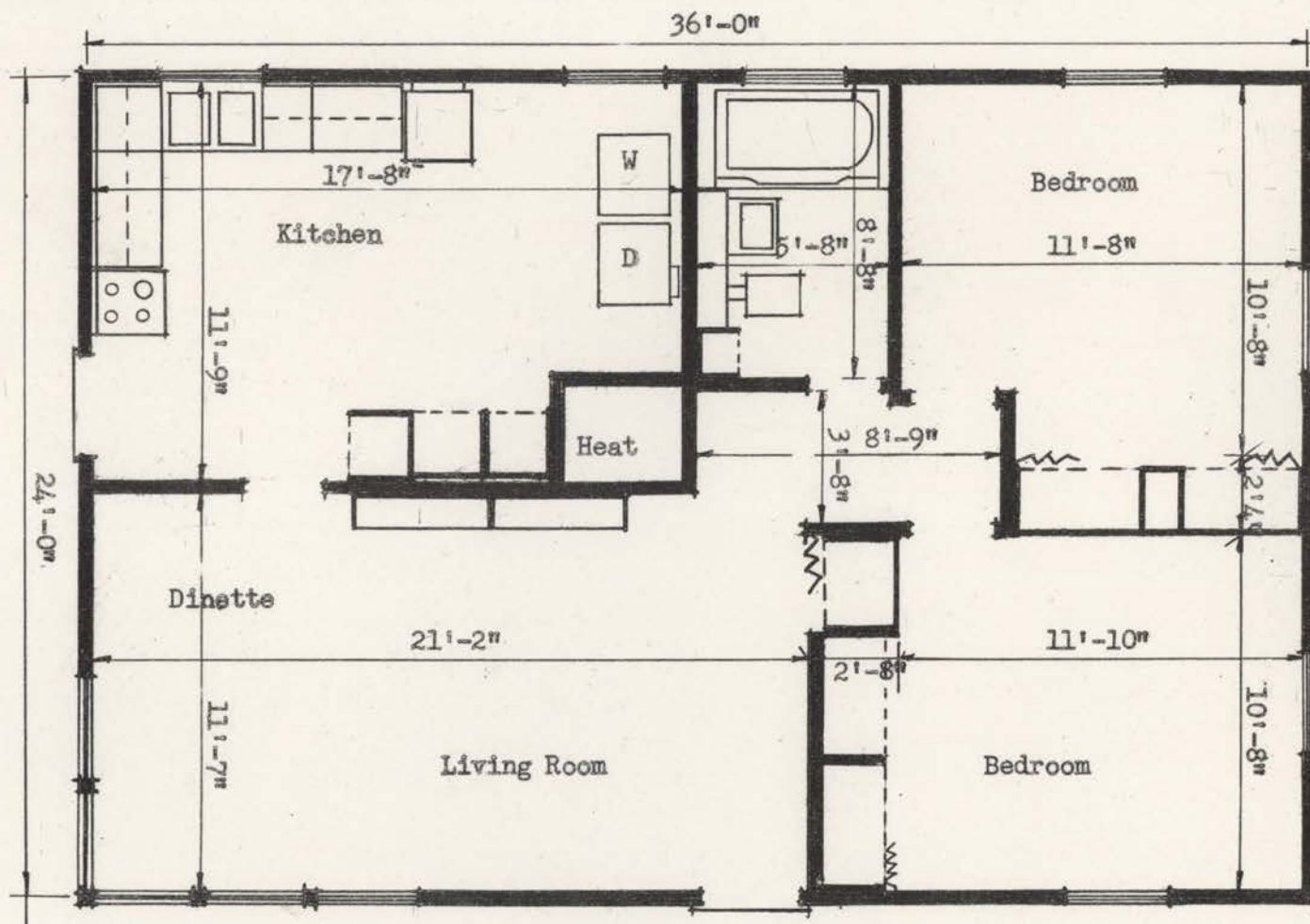
PLANS

The plans illustrated on the following pages are those used in the study. The plans are identified by a code number which is based on the order in which the families occupied the test house, the floor plan tested, and the sequence of the floor plans during the period each family occupied the house.

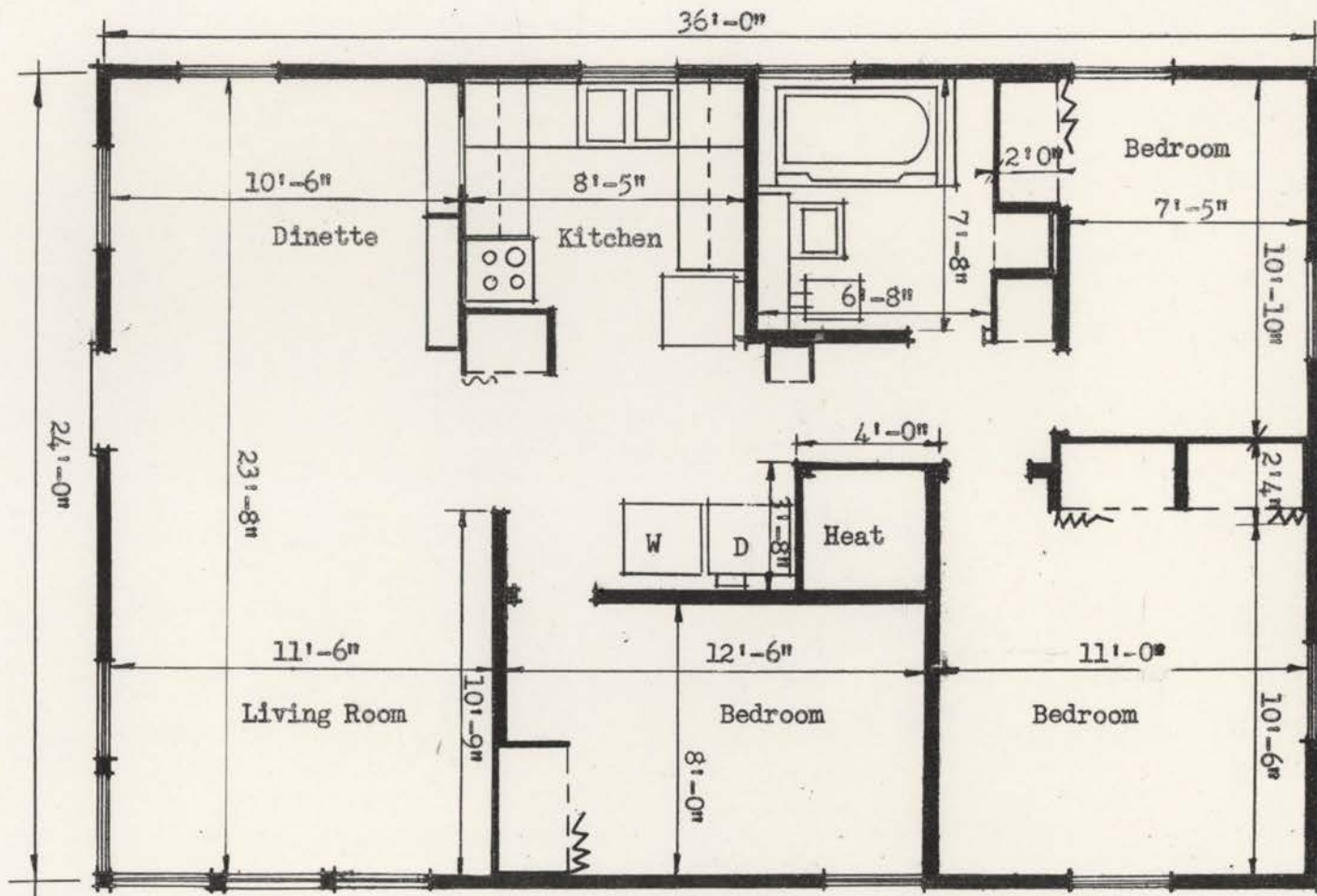
2 - G - 6



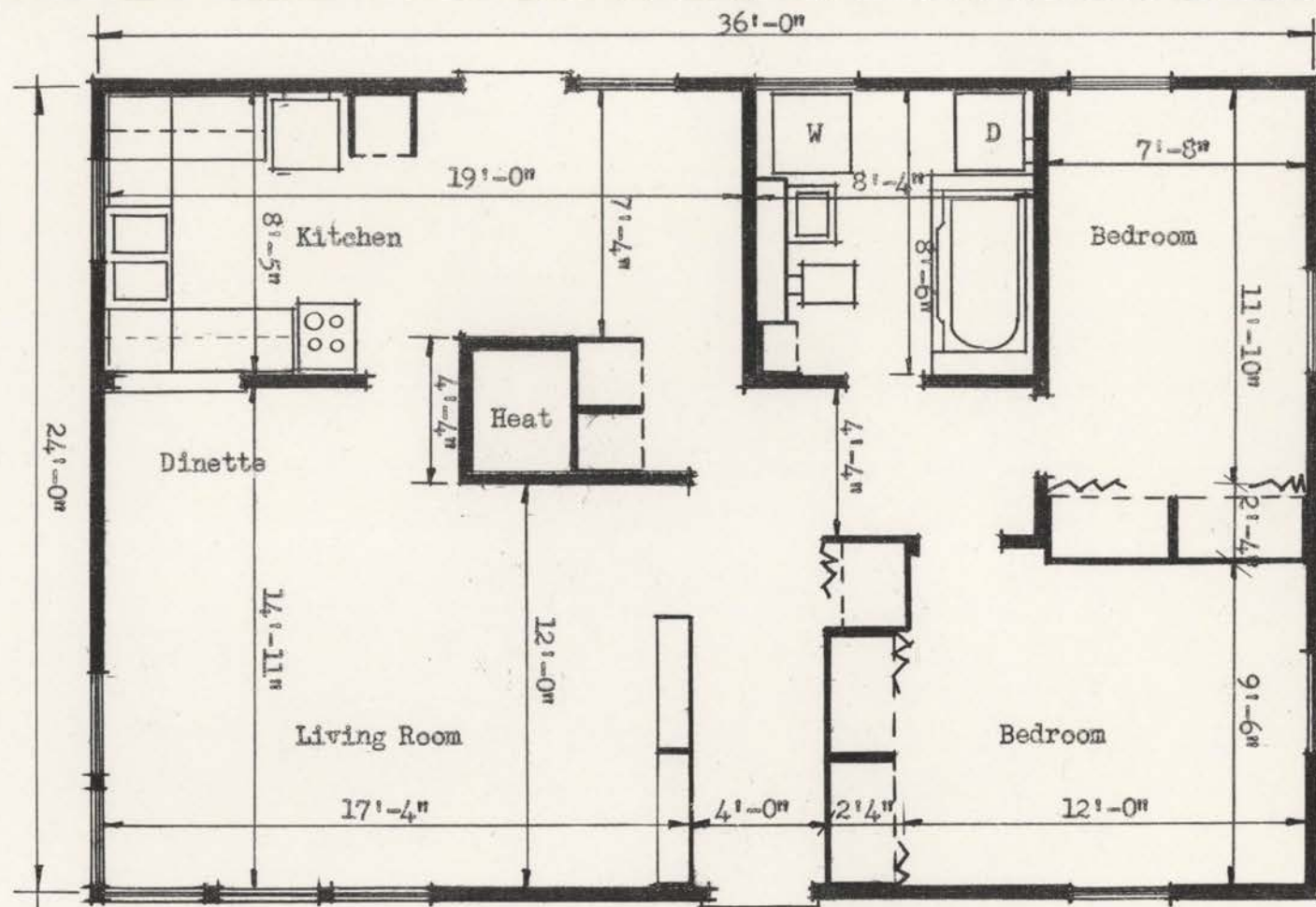
Plans 1-F-6, 2-G-6, and 3-J-3 are the families' own designs.



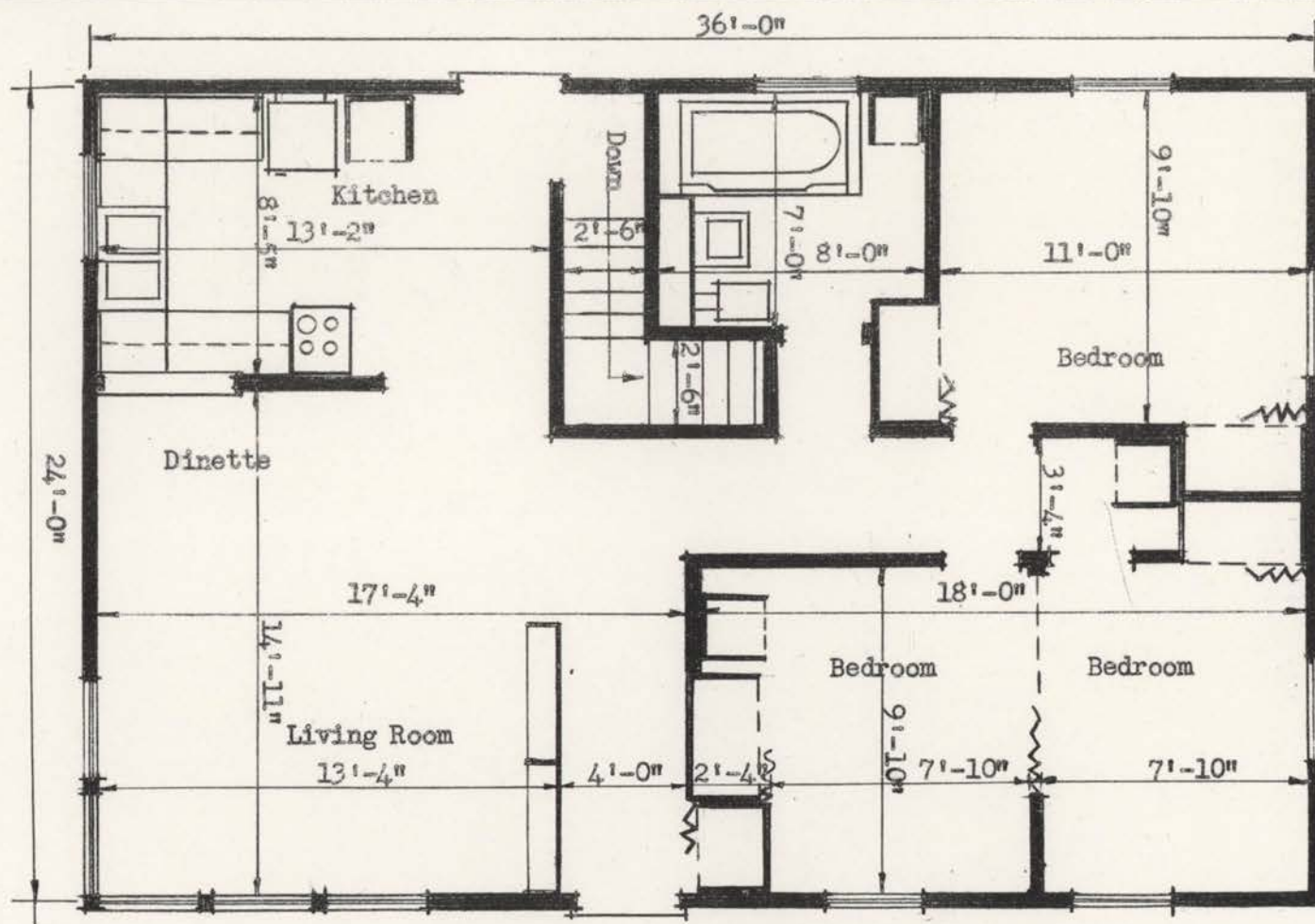
Plan 1-A-1



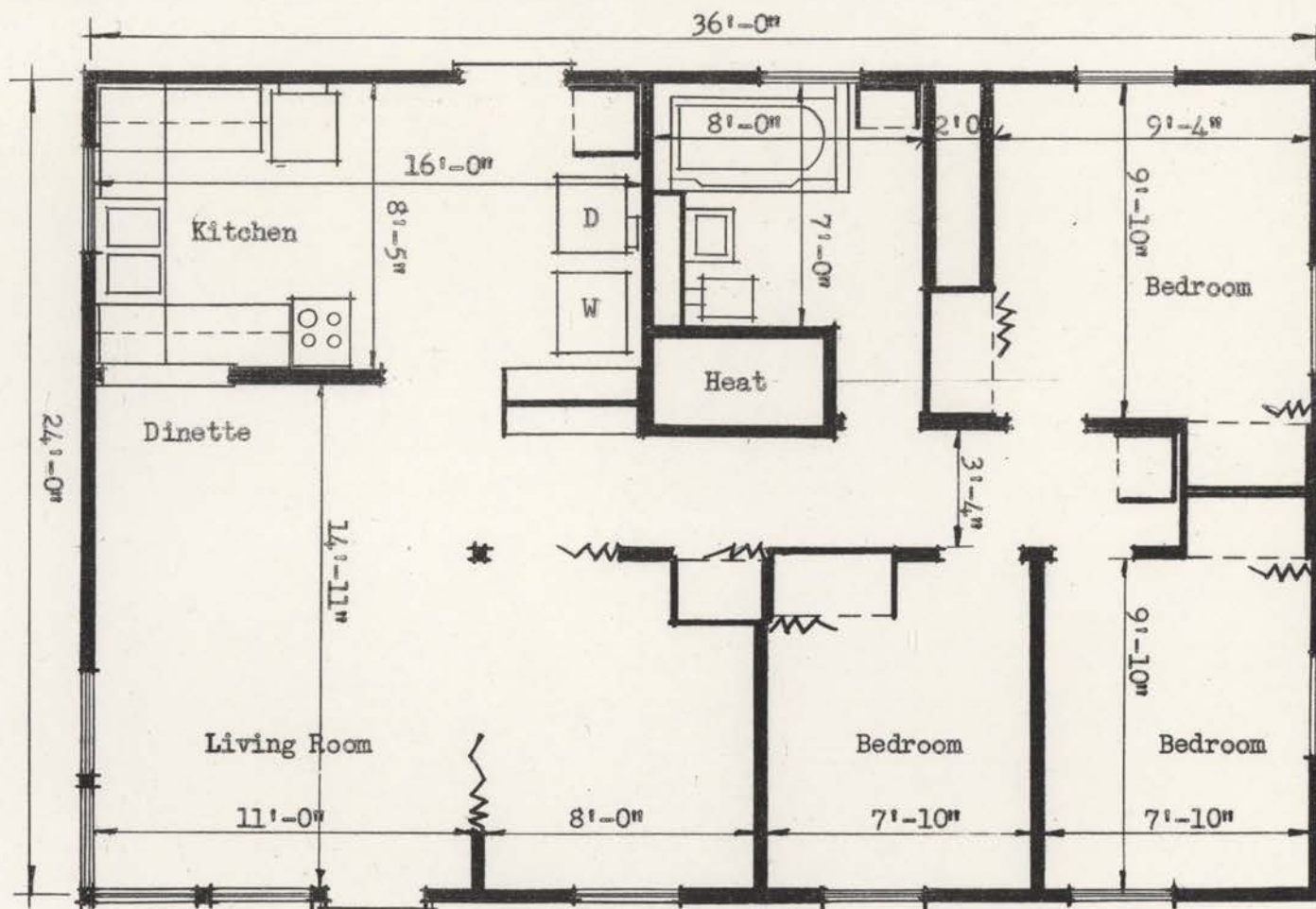
Plan 1-B-2



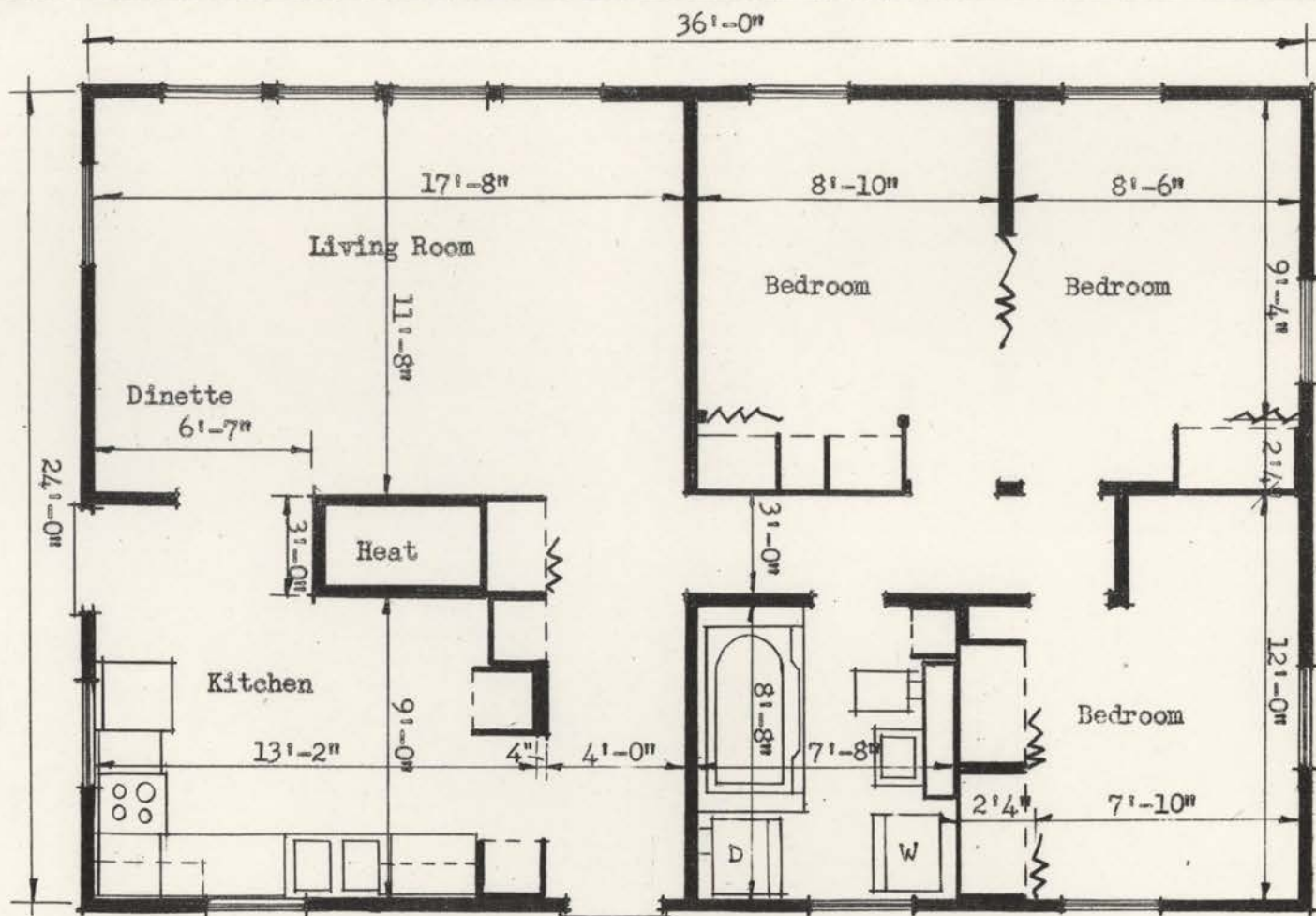
Plan 1-C-3
(Also Plan 2-C-4)



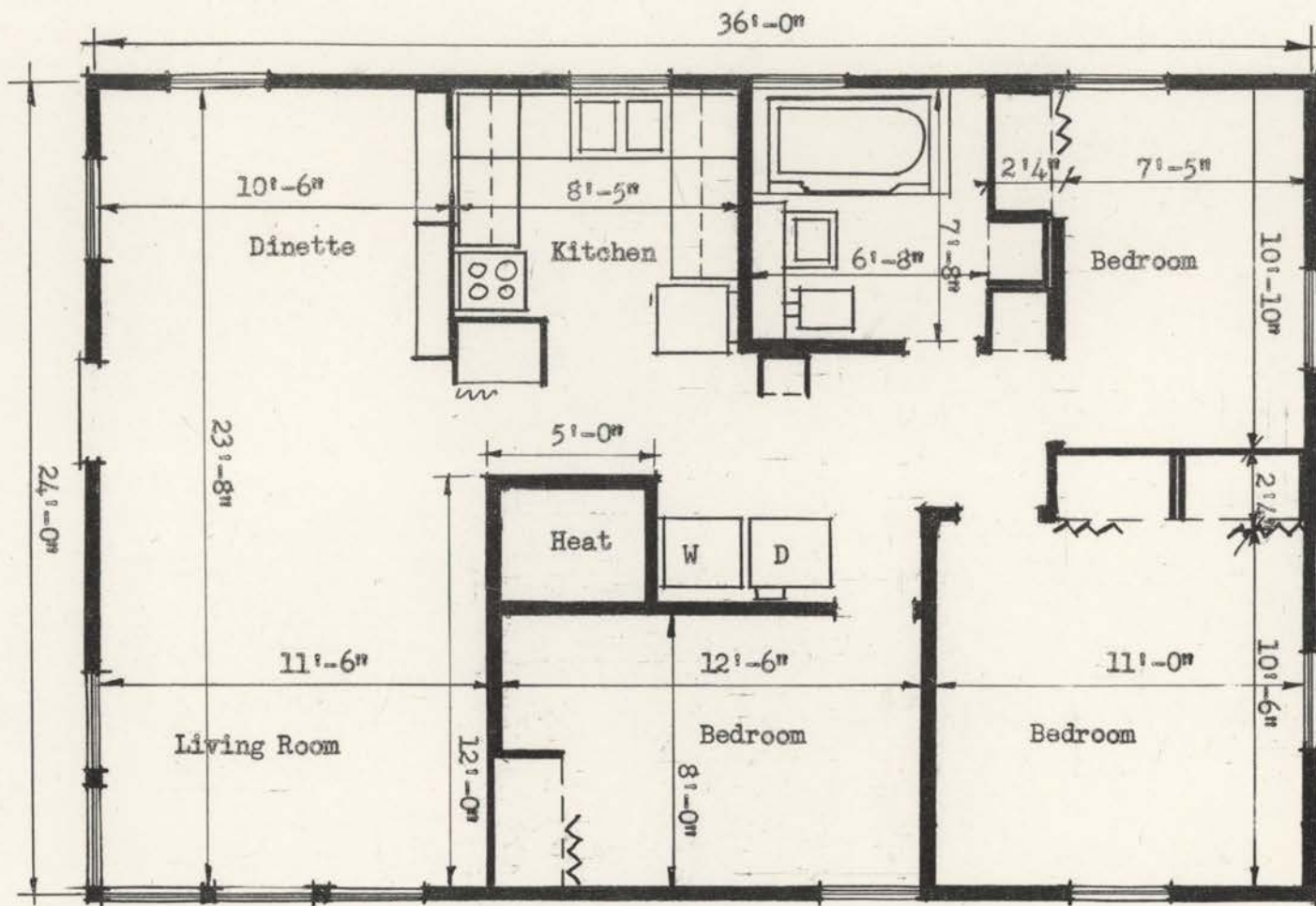
Plan 1-D-4
(Also Plan 2-D-3)



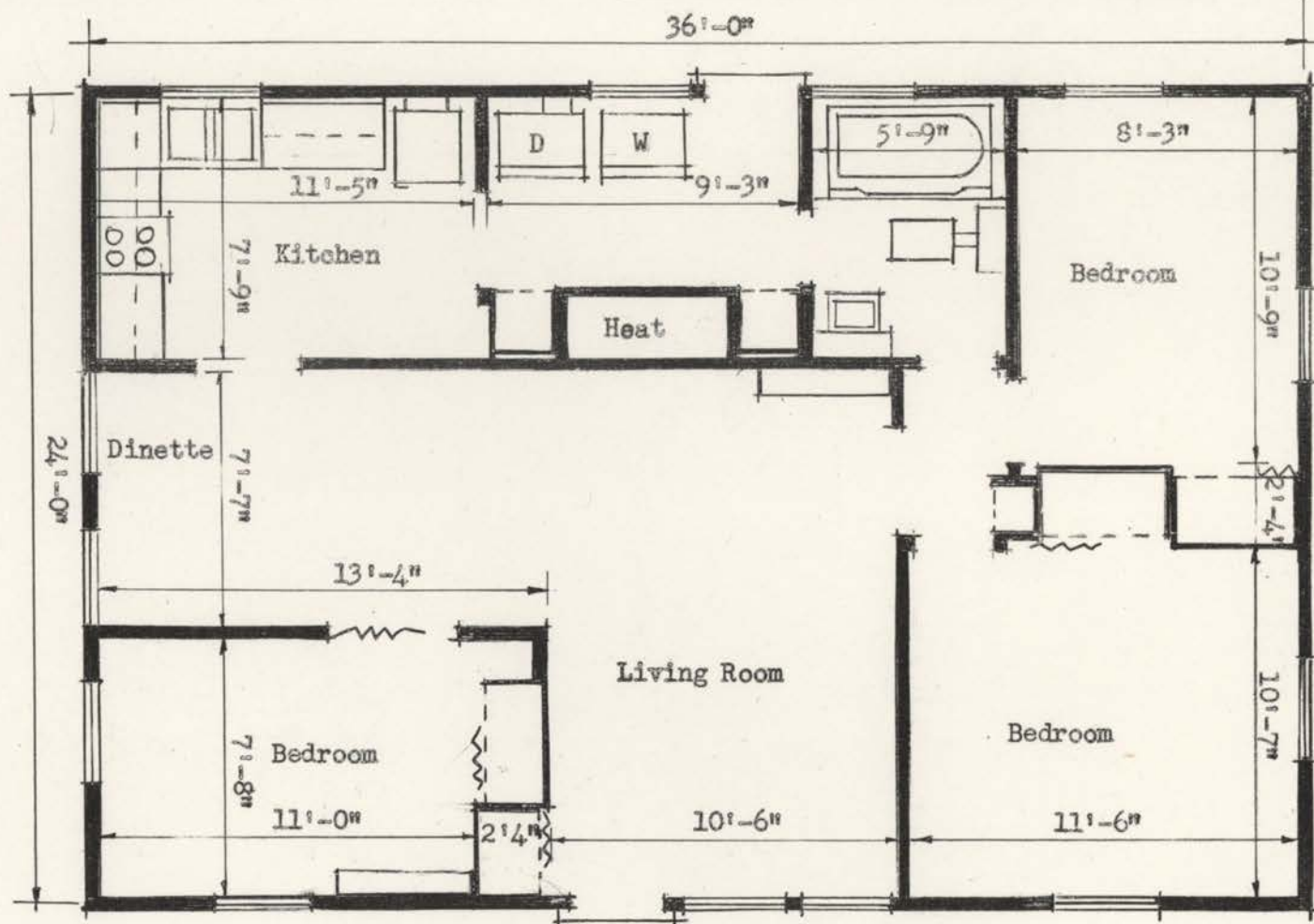
Plan 1-E-5
(Also Plan 2-E-2)



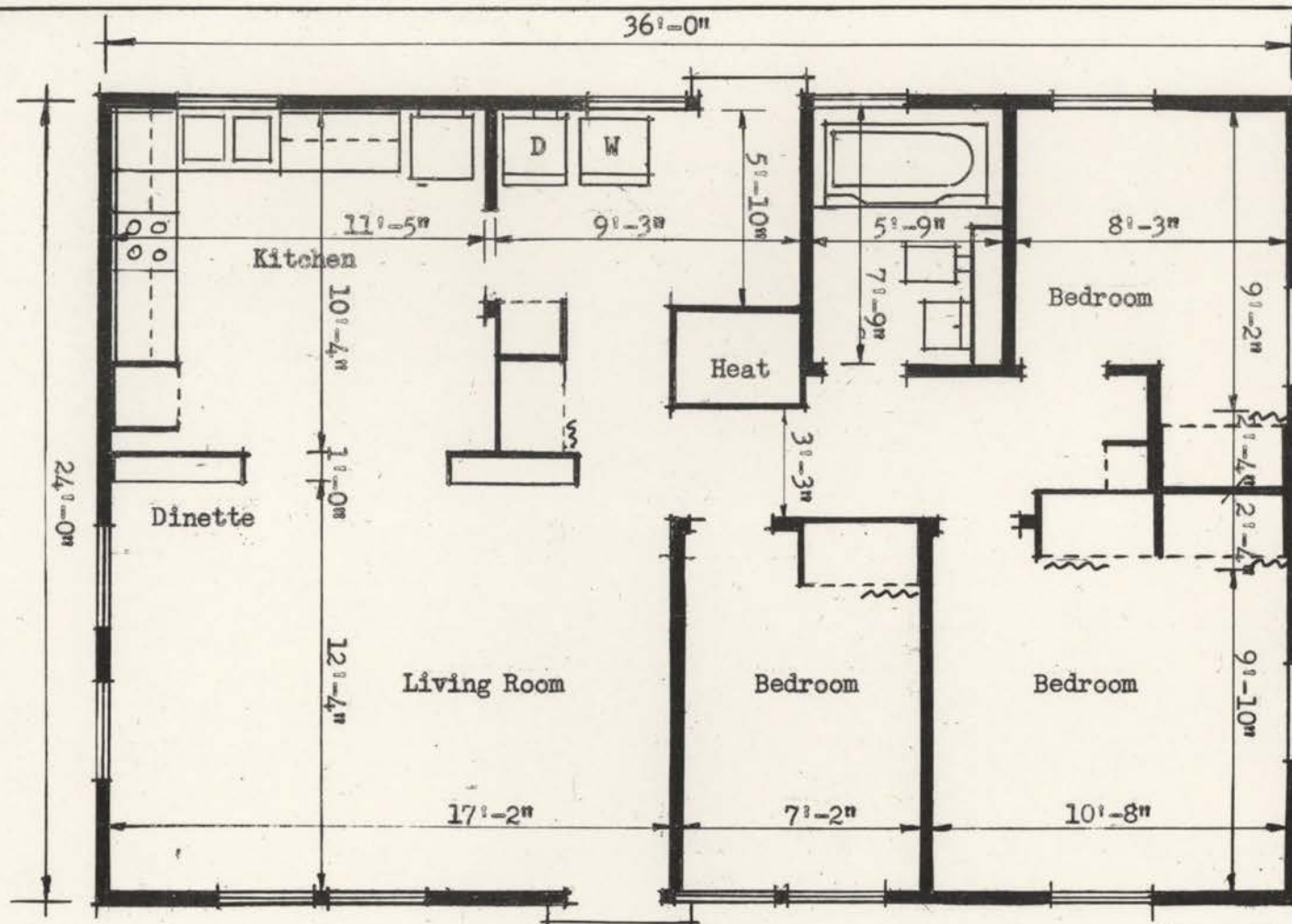
Plan 1-F-6
(Also Plan 2-F-1)



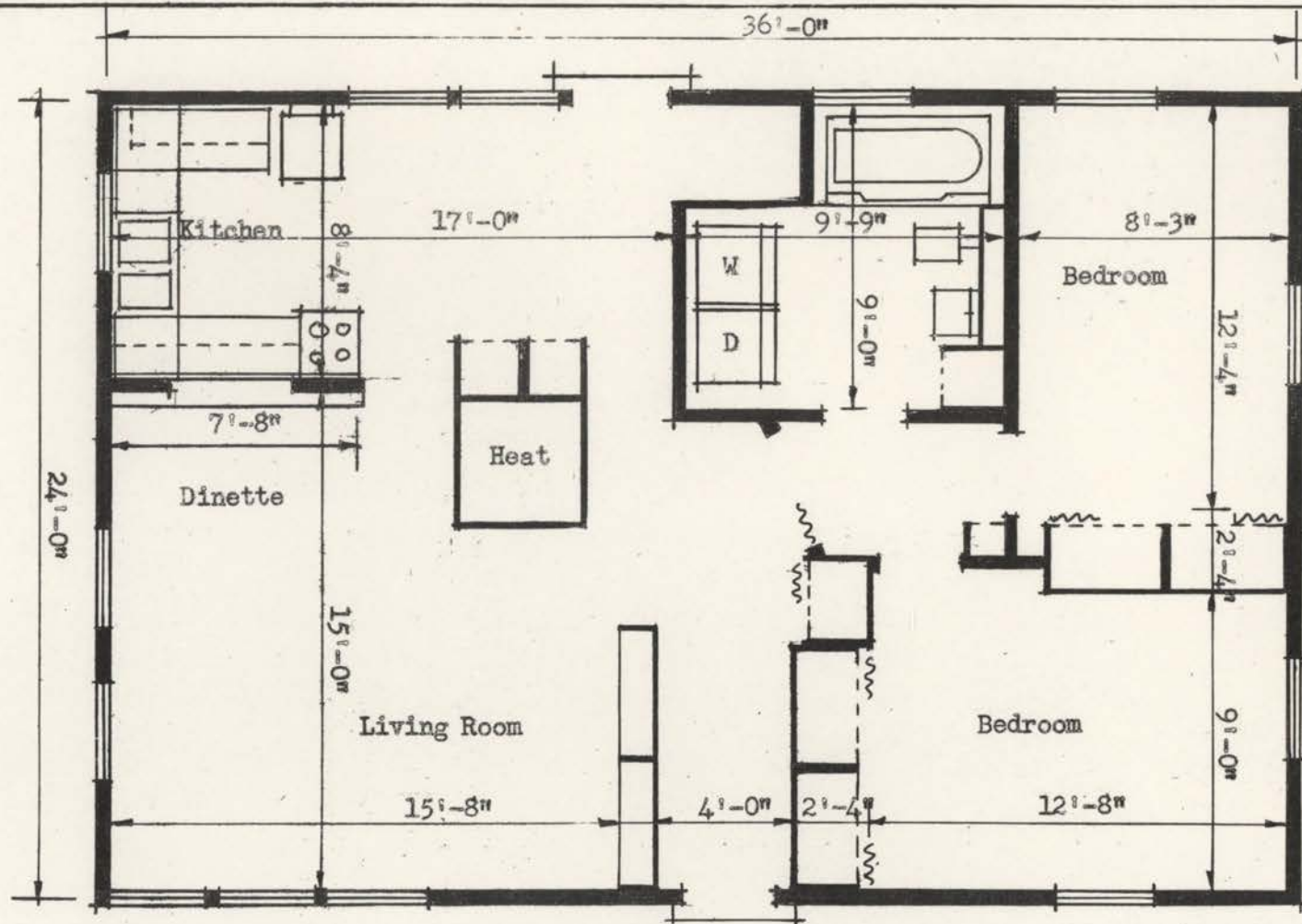
Plan 2-B-5



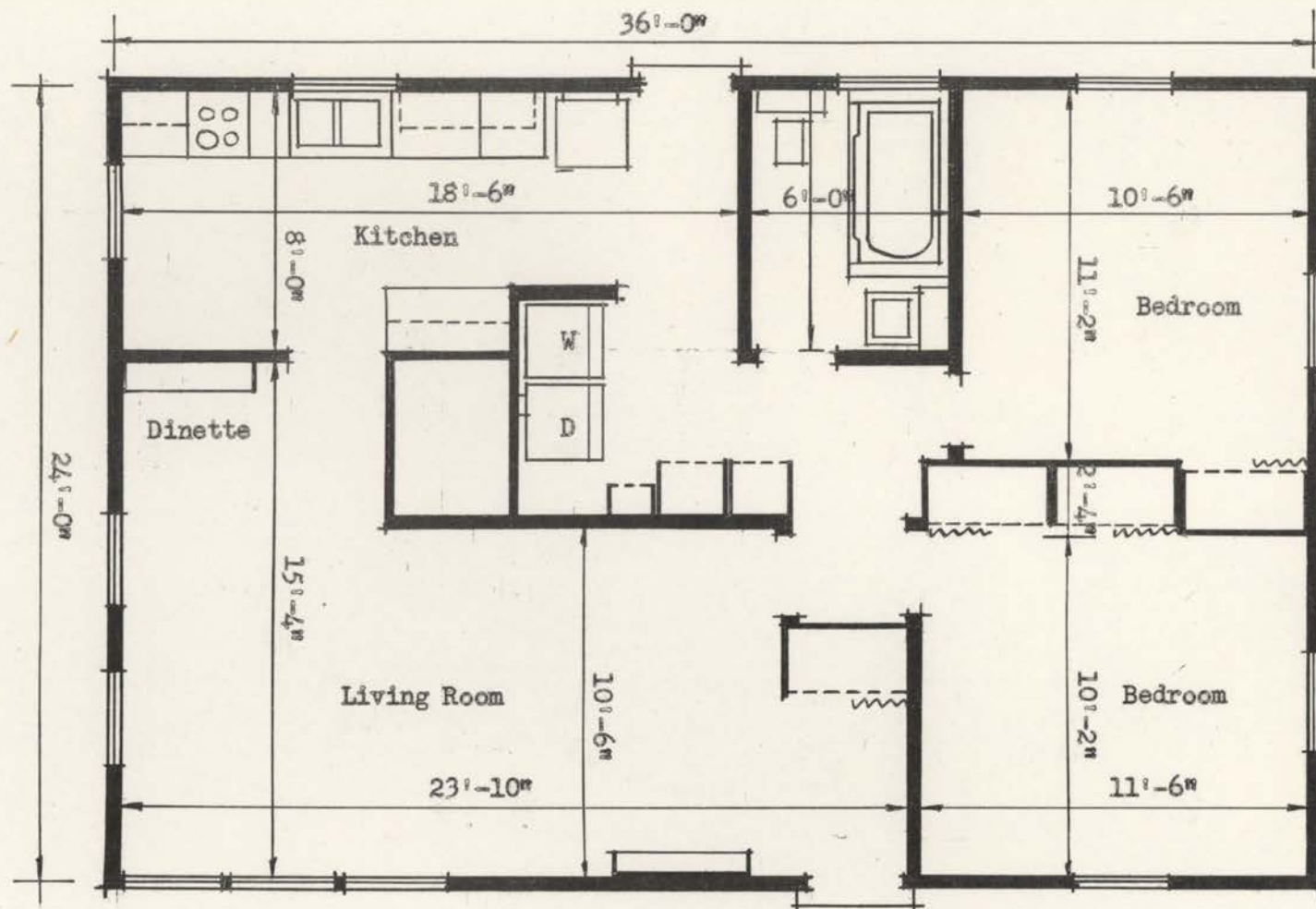
Plan 2-G-6



Plan 3-H-1



Plan 3-I-2



Plan 3-J-3

FAMILY ACTIVITIES

Introduction and Methodology

To achieve better design of dwellings, more detailed knowledge of the use of space within the dwelling is required. To gain this knowledge, each test family occupying the test dwelling was required to keep a 14-day log of its activities during each test plan-period. This 14-day period, which occurred in the middle of each plan-period, is referred to throughout this study as the "record-period". The families were required to keep the records on prepared charts which listed activities, rooms, and times at 15-minute intervals. Records were kept for each member of the family.

Charts were varied to suit the activities of the different families. Charts were further varied if experience indicated flaws in their makeup. A great deal of overlapping occurred in the early records. For example, "Radio Listening" might be recorded at the same time as other activities were reported. This was later corrected by specifying that listening to the radio should be recorded only when that was the only activity being carried on. This change may account in part for the difference in time spent in radio listening between the three families. Similarly, the activity "Washing Clothes by Machine" was later specified as loading and unloading the washer, including collecting clothes, sorting, etc. Here the effort was to eliminate from the record the time recorded during which the washer was operating unattended. The intent was to obtain a record of the time spent while the individual was actively engaged in the activity. Similar changes were made in "Drying Clothes" and "Baking".

The first family was asked to report time spent in telephone conversation; the second family did not have a telephone. It was decided not to ask the third family for this report as this activity appeared to have little significance. Telephone-conversation time is not included in this report.

The method of recording was simplified as much as possible but errors were still possible through (1) misinterpretation of the activity classification, (2) lack of recording, (3) recording activity in the wrong room, and (4) recording the wrong time for the activity. Apparent errors appeared in the families' recording, and, wherever possible, these errors were investigated, proven or disproven. Some apparent errors could not be checked and still remain in the record.

Tabulations of the activity records are shown on pages 29-49. The tables refer to the total time spent in all of the rooms by all members of the family for the activity under consideration, with deductions being made when a room was used simultaneously by more than one family member. Daily averages are calculated for all activities; however, they are significant only for those activities which took place every day. For non-daily activities, record-period averages are shown for purposes of comparing the activities of the families.

In general, activity information obtained in the tabulation of the records indicates a good degree of conformity with the actual living pattern of the families.

Sample of Portion of Activity Record Sheet

Family _____ Member _____ Date _____ Plan _____

			7	8	9	10
PERSONAL CARE	DRESSING & UNDRESSING	Living room				
		Dinette				
		Kitchen				
		Bathroom				
		Master Bedroom				
		Bedroom No. 2				
		Bedroom No. 3				
	PERSONAL GROOMING	Living room				
		Dinette				
		Kitchen				
		Bathroom				
		Master Bedroom				
		Bedroom No. 2				
		Bedroom No. 3				
	BATHING	Bathroom				
	CARING FOR CHILDREN	Living room				
		Dinette				
		Kitchen				
		Bathroom				
		Master Bedroom				
		Bedroom No. 2				
Bedroom No. 3						
FOOD	MEAL PREPARATION	Living room				
		Dinette				
		Kitchen				
	EATING	Living room				
		Dinette				
		Kitchen				
	WASH & DRY DISHES	Kitchen				
	BAKING	Kitchen				

FAMILY ACTIVITIES Analysis

General Comments

This study has shown that two things usually determine the way in which a room or facility will be used: (1) the living pattern of the family, and (2) the facilities provided. The actual use usually represents a compromise between the living pattern and the actual facilities provided. If there is a sharp conflict between the two, and, if there is a reasonable alternate way of doing the activity in question, the family's living pattern is apt to be the deciding factor.

In general, planners have relied upon their ability to anticipate the activities to be provided for--i.e., they have assumed that a room or facility would be used the way that they intended it to be used. Their idea of how an area is to be used may not prove an actuality. For example, in Plan C, though one end of the kitchen was intended as a play area for the children, the first family actually preferred to use this area as an eating area. Having eating facilities in the kitchen was more important to them than having a play area there. Such situations point up the need for more studies of this sort to empirically determine the relative significance of the various attitudes and values in the home.

Though the amount of time spent on the various activities varied significantly among the three families at times, the rooms in which these activities were carried on were usually the same, regardless of the plan. Large differences in amount of time are usually explained by the different living patterns of the families; however, some time differences can be explained by changes in recording procedures. (See introduction of this section.)

Dressing and Undressing

The members of all three families used their respective bedrooms for dressing; however, the bathroom was usually used for dressing the younger child in plans with only two bedrooms, such as Plan C (Table 2).

There was considerable difference in the amount of time the families spent in dressing. The first family used the various rooms for dressing a total average of 59 minutes per day; the second family averaged 1 hour and 39 minutes per day; and the third family averaged 1 hour and 16 minutes per day.

Bathing

Only one instance of bathing elsewhere than in the bathroom was reported. This was one period when the small girl of Family I was bathed in the kitchen. There is, of course, the possibility that this recording was in error (Table 3).

The first and third families' patterns of bathing were quite uniform. All members of these families bathed regularly every two to three days. The

second family's bathing habits were more erratic, but about the same amount of time was used for this activity.

Personal Grooming

All families did most of their personal grooming in the bathroom (Table 4). The second family used the bathroom primarily. In addition to the bathroom, the members of the first family used their respective bedrooms quite frequently for grooming; the third family frequently used the kitchen. It is interesting to note that the first family spent more than twice as much time per day in personal grooming as did the second family--2 hours and 6 minutes compared to 51 minutes. The third family averaged 1 hour and 6 minutes per day. Probably the main reason for the great difference in the amount of time spent by the first and second family was that the first family did an average, or perhaps an above average, amount of entertaining; whereas, the second family did little entertaining.

Caring for Children

The first and third families cared for their children primarily in the bathroom but also used the kitchen and all of the bedrooms (Table 5). On the other hand, the second family almost always cared for the children in the bathroom. The kitchen was never used for this activity and the bedrooms were used only infrequently and for short periods of time. The first family spent an average of 35 minutes per day in this activity; the second family averaged 30 minutes per day; and the third family spent almost twice as much time, 58 minutes per day. The fact that the children were somewhat younger in this family may have influenced this factor.

Napping

The members of the first and third families usually used the bedrooms for taking a nap (Table 6). In the first family, the small girl used her own bedroom and the mother used the other child's bedroom. In plans with only two bedrooms, the mother usually used the parents' bedroom. In the third family, the mother took a nap about equally in the living room and in her own bedroom, and her pre-school child always used her own bedroom. In the second family, the mother was the only one who somewhat regularly took a nap. She most often used the parents' bedroom, but she frequently used the living room.

Preparing Meals

Of course, meals were prepared almost entirely in the kitchen by all three families (Table 7). The first family also used the dining section of the living room in Plans B and C. The reason for this is apparent in the case of Plan B where the kitchen was only 8'-0" x 8'-5". The amount of time that the families spent each day in the preparation of meals was not too different--the first family, 1 hour and 5 minutes; the second family, 1 hour and 42 minutes; and the third family, 1 hour and 19 minutes per day.

Baking

The kitchen, naturally, was the only room used for baking (Table 8). The second family averaged more time in baking than did the first or third families though it appears that the second family did no baking in Plans C and D. The first family averaged 2 hours and 12 minutes per record-period in baking; the second family, 1 hour and 41 minutes; and the third family, 1 hour and 8 minutes.

Eating

Wherever the families had a choice, all families almost always ate their daily meals in the kitchen and served guests in the dinette area (Table 9). Even in plans with no eating facilities in the kitchen, the kitchen was used for eating purposes occasionally. The boy in the first family usually ate an afternoon lunch in the kitchen after coming home from school; the mother and both of the children in the second family often ate lunch (at noon) while standing in the kitchen.

The first family spent more time per day in eating than the second and third families. The first family spent an average of 1 hour and 52 minutes compared to 1 hour and 11 minutes for the second family, and 1 hour and 39 minutes for the third family.

Washing Dishes

Of course, the dishes were always washed in the kitchen by all families (Table 10). Relatively large differences in the amount of time spent in washing dishes were found between the various plans, but no consistent relationship was found between the amount of time spent in washing dishes and the plan when the families are compared. The first family spent an average of 51 minutes per day in washing dishes compared to 43 minutes per day for the second family, and 34 minutes for the third family.

Washing Clothes by Machine

Clothes were always washed wherever the laundry facilities were located (Table 11). The first family washed an average of four to five times per week compared to two to three times per week for the second and third families. For the first family, this amounted to an average of 4 hours and 59 minutes per record-period; for the second family, 2 hours and 49 minutes; and for the third family, 3 hours and 17 minutes. The amount of time used in washing clothes is influenced by too many factors to allow the time measurement to be used as a means of rating the efficiency of the different clothes-washing arrangements.

Drying Clothes

The first family always dried their clothes in the dryer (Table 12). The location of the dryer varied with the plan as did the washer.

The amount of time the dryer was used varied with the amount of time spent in washing clothes. The dryer was used an average of 8 hours and 1 minute for each record-period by the first family, and 2 hours and 35 minutes by the third family. The mother in the second family dried her clothes outside in all plans except the last one. In that plan (G), she reported using both the washer and the dryer only two times. Despite this, it is likely that the laundry was done somewhat the same as usual--i.e., two to three times per week, especially since this was the last plan used by the family.

Hand Laundering

Both the kitchen and the bathroom were used for doing hand laundry (Table 13). More time was spent in doing hand laundry by the second family than by the first. The first family averaged 24 minutes for the five record-periods in which data were taken compared to an average of 1 hour and 17 minutes for the second family, and an average of 23 minutes for the third family.

Ironing

In all families, ironing was usually done in the kitchen; however, the mother in the second family frequently ironed in the dinette section of the living room (Table 14). In Plan D, with a basement, the basement was occasionally used. The second family spent much more time in ironing than the first or third families. The first family averaged 2 hours and 56 minutes for each record-period compared to 13 hours and 51 minutes for the second family, and 1 hour and 55 minutes for the third family.

Sewing and Mending

The living room was usually used for sewing and mending by both the first and the second families (Table 15). Both of these families also used the parents' bedroom. In addition, the second family used the dining section of the living room. The third family used the living room and the parents' bedroom about equally. The first and third families sewed only infrequently, but the second family sewed quite regularly. The first family averaged 1 hour and 29 minutes for six record-periods (in Plan E, they did no sewing or mending); the second family averaged 14 hours and 50 minutes per record-period; and the third family averaged only 1 hour and 30 minutes.

House Cleaning

Analysis of Table 16 shows considerable differences in the amount of time spent in house cleaning for the various plans. A consistent relationship, however, between the plan and the amount of time required to clean the house is not shown. For example, the first family spent more than an average amount of time in cleaning the house in Plan C. On the other hand, the second and third families spent less time in cleaning the house in Plan C than in any of

the other plans. It is quite likely, however, that a clear relationship between the plan and the amount of time required to clean it would be revealed if the sample were enlarged to a point of statistical significance. Plan D gives evidence of this. The amount of time required to clean Plan D (with a basement) was very low for both families that used the basement. The first family averaged 13 hours and 45 minutes per record-period in house cleaning compared to 11 hours and 43 minutes in cleaning Plan D. The second family averaged 14 hours and 6 minutes for each record-period compared to 12 hours and 36 minutes in cleaning Plan D.

Differences were also noted in the amount of time required to clean specific rooms in different plans. For example, the average amount of time the first family spent in cleaning the kitchen for each record-period was 1 hour and 55 minutes compared to 1 hour and 30 minutes in Plan B. The average amount of time spent in cleaning the kitchen for the second family was 1 hour and 34 minutes compared to 30 minutes spent in cleaning the kitchen in Plan B. The small size of the kitchen in Plan B (8'-0" x 8'-5") was no doubt the main reason for this. The third family spent an average of 1 hour and 8 minutes in cleaning the kitchen, compared to only 30 minutes in cleaning the kitchen in Plan H.

In plans with the laundry in the bathroom, two of the three families found it took more than an average amount of time to clean the bathroom. The average amount of time required to clean the bathroom for the first family was 1 hour and 10 minutes compared to plans with bathroom-laundry arrangements--1 hour and 35 minutes in Plan C, and 2 hours and 30 minutes in Plan F. The average amount of time required to clean the bathroom for the second family was 2 hours and 19 minutes compared to plans with bathroom-laundry arrangements--2 hours and 24 minutes in Plan F, and 2 hours and 48 minutes in Plan C. On the other hand, the average time required to clean the bathroom by the third family was 52 minutes compared to 40 minutes spent in cleaning the bathroom in Plan I (with laundry in the bathroom).

Household Business

The first family recorded an average of 7 hours and 46 minutes per record-period for household business, and the third family averaged 5 hours and 33 minutes. The second family very infrequently reported doing household business (Table 17). It is likely that it was done fairly regularly by the second family also, but that it simply was not reported, or perhaps it was done by the husband at his office.

Entertaining

The living room was most frequently used for entertaining; however, the first family used the kitchen and the children's bedrooms occasionally (Table 18). The second family always used the living room for entertaining. It will be noted that there were big differences in the amounts of time the two families spent in entertaining. The first family averaged 19 hours and 35 minutes per record-period for entertaining. On the other hand, the second family entertained during three record-periods only; when considered over the six record

periods, the average per record-period was 1 hour and 10 minutes. The third family averaged 5 hours and 47 minutes per record-period in entertaining. The amount of time that the first family spent in entertaining went up during the month of December, due largely to the holidays. The second and third families did not live in the experimental house during the month of December.

Reading

Reading was usually done in the living room by all families (Table 19). They also occasionally used the kitchen and the bedrooms, except in the case of Plan B, where no reading was done in the kitchen presumably because of its small size (8'-0" x 8'-5"). The first family averaged 1 hour and 58 minutes per day in reading; the second family, 2 hours and 24 minutes; and the third family, 2 hours and 19 minutes.

Letter Writing

There is no data on letter writing for the first family (Table 20). The second family almost always wrote letters in the living room. The third family spent about equal amounts of time in writing letters in the kitchen and in the living room. This type of activity was usually carried on once or twice a week.

Radio Listening

This activity includes both listening to the radio only and listening to the radio while other activities were in progress. The radio was listened to primarily in the living room by all families (Table 21). The first family also listened to the radio quite frequently in the kitchen. In addition to the living room, the second family occasionally listened to the radio in the parents' bedroom, except in the last plan (G) when the radio was listened to primarily in the parents' bedroom. A progressive increase in the use of the radio will be noted from August through November for the second family. The third family used their radio progressively less from the winter months to the summer months. However, no seasonal relationship was found in the case of the first family. The first family listened to the radio an average of 2 hours and 38 minutes per day; the second family averaged 1 hour and 40 minutes per day; and the third family averaged only 29 minutes per day.

Children's Play

The children in all families usually played in the living room when they were indoors; however, all of the other rooms of the house were also used for children's play (Table 22). The children in the first family usually played in the living room, but they also played in their own bedrooms quite often. The children in the second family usually played in the living room, but also used the dinette section of the living room quite frequently in Plans B and G. They used the west end of the kitchen in Plan C and the playroom alcove in Plan E. The children in the third family typically played in the living room,

but in addition used the kitchen quite often, and the dinette area and the children's bedroom(s) occasionally.

The children in the first family played in all of the rooms of the house an average of 5 hours and 31 minutes per day; the second family, 5 hours and 30 minutes per day; and the third family, 3 hours and 40 minutes.

The season of the year was a variable factor in the children's indoor play. The first family lived in the experimental house from December through May; the second family from June through November; and the third family from February until September. The children in the second family, living in the house primarily in the summer months, played outside of the house more often than did the children in the first family. The children in the third family, living in the experimental house primarily in good weather, also played in the house less than the children in the first family.

From June through August, the children in the second family played in the house much less than average, with the exception of the month of July, Plan E. The reason for this seems to lie in the fact that Plan E had a separate playroom. The children played in the house much more than average during the months of September, October, and November. The children in the third family played in the house considerably less in the last plan (used during July and August).

FAMILY ACTIVITIES Daily Living Pattern

Typical Day

An effort was made to determine the mother's typical day. This proved to be impossible as each day differed in the amount of time spent on various activities, and, of course, certain activities were not part of the daily routine.

In general, the mother of Family I followed this sequence: Meal preparation was first on the list in the morning. This was usually followed by a period of reading and eating after which the mother dressed and took care of the children. With this might be interspersed a short period of grooming after which the household tasks were begun. Dishwashing was completed. The clothes-washing operation was started and while this proceeded, house cleaning was done. By this time, preparation of the noon meal was in order, followed by eating, then dishwashing.

The afternoon schedule was more varied. There was usually a nap—it was often preceded by baking, ironing, or sewing. A period of dressing and/or grooming followed. Then the evening meal was prepared and eaten and the dishes were washed. Sometimes guests might be entertained in the afternoon.

The evening might be partially occupied by a household task, such as ironing or sewing, and a certain amount of child care was performed. The remainder of the evening involved reading, entertaining guests, and bathing.

The daily pattern of the mother of Family II was much the same with one or two exceptions. This mother did house cleaning both in the morning and afternoon; laundry was done and hung outdoors in the morning and then brought in during the afternoon. She did practically no entertaining, but spent more time in sewing and ironing.

Time Spent on Routine Tasks

Of far more significance, however, is a compilation of the times spent by the mothers in performing the basic everyday household tasks and routines plus child care. These activities occupied a major portion of the mothers' day as seen in the following table. It should be realized that this table is based on averages, and that no one individual day may follow this time allotment exactly; nevertheless, the table does give an idea of the importance of certain tasks in the daily pattern of living.

TABLE 1 -- TIME SPENT ON ROUTINE TASKS

	<u>Family I</u>	<u>Family II</u>	<u>Family III</u>
Caring for Children	1/2 hr.	1/2 hr.	1 hr.
Preparing Meals	1-1/4 hrs.	1-3/4 hrs.	1-1/4 hrs.
Eating	1-3/4 hrs.	1-1/4 hrs.	1-3/4 hrs.
Washing Dishes	1 hr.	3/4 hr.	1/2 hr.
House Cleaning	1 hr.	1 hr.	1/2 hr.
Household Business	1/2 hr.	-	1/2 hr.
Washing and Drying Clothes	1/2 hr.	1/2 hr.*	1/2 hr.
Ironing	1/4 hr.	1 hr.	1/4 hr.
Sewing	-	1 hr.	-
	6-3/4 hrs.	7-3/4 hrs.	6-1/4 hrs.

The remainder of the day was taken up by short periods of other household tasks and by personal care items (dressing, bathing, grooming, napping) and recreational items.

It should be pointed out that time spent outside the house is not tabulated; therefore, there is no time shown for such activities as shopping or taking the children to school.

(*) Includes time for hanging out clothes.

FAMILY ACTIVITY TABLES
Time Spent and Rooms Used in Various Activities

General Note

Times recorded in the following tables refer to the total time spent in all of the rooms by all members of the family for the activity under consideration. Deductions were made when a room was used simultaneously by more than one family member.

Daily averages are given for all activities. However, these averages are not significant for activities which occurred only periodically. For these activities, such as washing clothes, drying clothes, baking, etc., a record-period* average is given also.

Daily averages are based on the total number of days** in all of the record-periods, excepting for those periods where no data was taken.

Table 7 - Baking

Recording method varied somewhat during tests. Final instructions called for time spent in preparing for baking. Unattended oven time was not included.

Table 10 - Washing Clothes by Machine

Recording method varied somewhat during tests. Final instructions called for time spent in collecting and sorting clothes, and loading and unloading the washing machine.

Table 11 - Drying Clothes

Recording method varied somewhat during tests. Final instructions called for time spent in loading and unloading the dryer. Hanging clothes outdoors was not included in this category.

Table 20 - Radio Listening

Recording method varied during tests. Final instructions called for time spent in listening to the radio while no other activity was carried on.

Table 21 - Children's Play

Outdoor children's play is not included in this table.

(*) The 14-day period in the middle of each plan period, during which each family logged its activities.

(**) Family I and Family II, 84 days; Family III, 42 days.

TABLE 2 -- DRESSING AND UNDRESSING
(Rooms Used and Amount of Time Spent)

Plan	Living Room h. m.	Dining Room h. m.	Kitchen h. m.	Bath Room h. m.	Master B.R. h. m.	Boy's B.R. h. m.	Girl's B.R. h. m.	TOTAL h. m.
<u>FAMILY I</u>								
1-A-1			(No data)					
1-B-2		15		49	6 30	3 05	4 03	14 42
1-C-3				40	7 20	6 05		14 05
1-D-4				12	6 45	2 25	2 48	12 10
1-E-5					7 50	2 20	2 09	12 19
1-F-6				05	9 30	2 30	3 18	15 23
TOTAL		15		1 46	37 55	16 25	12 18	68 39
DAILY AVERAGE								59
<u>FAMILY II</u>								
2-F-1					9 36	5 18	6 00	20 54
2-E-2			30	1 30	8 24	5 48	5 30	21 42
2-D-3				6 30	8 48	5 00	5 00	25 18
2-C-4				6 48	14 48	5 48		27 24
2-B-5				3 00	10 00	4 30	4 00	21 30
2-G-6				1 48	10 48	6 06	3 06	21 48
TOTAL			30	19 36	62 24	32 30	23 36	138 36
DAILY AVERAGE								1 39
<u>FAMILY III</u>								
3-H-1	4 42		20	40	5 55	7 47	2 30	21 54
3-I-2	40		25	45	6 50	6 50		15 30
3-J-3				4 40	5 20	5 50		15 50
TOTAL	5 22		45	6 05	18 05	20 27	2 30	53 14
DAILY AVERAGE								1 16

TABLE 3 -- BATHING
(Rooms Used and Amount of Time Spent)

Plan	Living Room h. m.	Dining Room h. m.	Kitchen h. m.	Bath Room h. m.	Master B.R. h. m.	Boy's B.R. h. m.	Girl's B.R. h. m.	TOTAL h. m.
<u>FAMILY I</u>								
1-A-1			(No data)					
1-B-2			(No data)					
1-C-3				6 50				6 50
1-D-4				7 15				7 15
1-E-5				6 00				6 00
1-F-6			20	6 25				6 45
TOTAL			20	26 30				26 50
DAILY AVERAGE								29
<u>FAMILY II</u>								
2-F-1				4 48				4 48
2-E-2				4 30				4 30
2-D-3				7 48				7 48
2-C-4				5 00				5 00
2-B-5				4 30				4 30
2-G-6				3 30				3 30
TOTAL				30 06				30 06
DAILY AVERAGE								22
<u>FAMILY III</u>								
3-H-1				6 30				6 30
3-I-2				8 30				8 30
3-J-3				6 10				6 10
TOTAL				21 10				21 10
DAILY AVERAGE								30

TABLE 4 -- PERSONAL GROOMING
(Rooms Used and Amount of Time Spent)

Plan	Living Room h. m.	Dining Room h. m.	Kitchen h. m.	Bath Room h. m.	Master B.R. h. m.	Boy's B.R. h. m.	Girl's B.R. h. m.	TOTAL h. m.
<u>FAMILY I</u>								
1-A-1			1 45	20 38	7 50	2 55		33 08
1-B-2			1 00	26 36	2 00		06	29 42
1-C-3			1 10	21 38	1 05	1 05		24 58
1-D-4			1 24	21 30	2 50	10	45	26 39
1-E-5			57	24 45	4 45	30	42	31 39
1-F-6	1 00		2 24	23 24	2 35	24	1 03	30 50
TOTAL	1 00		3 40	138 31	21 05	5 04	2 36	176 56
DAILY AVERAGE								2 06
<u>FAMILY II</u>								
2-F-1	30			14 54	3 30			18 54
2-E-2				10 18				10 18
2-D-3				7 24				7 24
2-G-4			15	11 36	30			12 21
2-B-5				10 00	15			10 15
2-G-6				12 48				12 48
TOTAL	30		15	67 00	4 15			72 00
DAILY AVERAGE								51
<u>FAMILY III</u>								
3-I-1	15		10	17 56	20	40		19 21
3-I-2		05	35	11 30	25			12 35
3-J-3		05	4 50	9 05	15			14 15
TOTAL	15	10	5 35	38 31	1 00	40		46 11
DAILY AVERAGE								1 06

TABLE 5 -- CARING FOR CHILDREN
(Rooms Used and Amount of Time Spent)

Plan	Living Room h. m.	Dining Room h. m.	Kitchen h. m.	Bath Room h. m.	Master B.R. h. m.	Boy's B.R. h. m.	Girl's B.R. h. m.	TOTAL h. m.
<u>FAMILY I</u>								
1-A-1			1 05	7 24		1 15		9 44
1-B-2			20	6 30		05	2 00	8 55
1-C-3			15	5 24	09			5 48
1-D-4			24	5 05	15	15	2 18	8 17
1-E-5			09	3 24	24	15	1 48	6 00
1-F-6			40	5 15	18	30	3 24	10 07
TOTAL			2 53	33 02	1 06	2 20	9 30	48 51
DAILY AVERAGE								35
<u>FAMILY II</u>								
2-F-1			30	8 30		54		9 54
2-E-2	30			5 42	48		1 00	8 00
2-D-3				7 48				7 48
2-C-4				8 30	15	15		9 00
2-B-5				4 00				4 00
2-G-6				2 18		15	15	2 48
TOTAL	30		30	36 48	1 03	1 24	1 15	41 30
DAILY AVERAGE								30
<u>FAMILY III</u>								
3-H-1	5 15	10	2 00	1 30	2 05	3 00	3 35	17 35
3-I-2	1 25	20	2 45	5 20	30	2 49		13 09
3-J-3	10		1 45	4 05	10	3 45		9 55
TOTAL	6 50	30	6 30	10 55	2 45	9 34	3 35	40 39
DAILY AVERAGE								58

TABLE 6 -- NAPPING
(Rooms Used and Amount of Time Spent)

Plan	Living Room h. m.	Dining Room h. m.	Kitchen h. m.	Bath Room h. m.	Master B.R. h. m.	Boy's B.R. h. m.	Girl's B.R. h. m.	TOTAL h. m.
<u>FAMILY I</u>								
1-A-1					4 45	18 05		22 50
1-B-2	1 48				4 05	45	12 00	18 38
1-C-3			09		14 05	16 40		30 54
1-D-4	1 09				4 00	1 40	13 00	19 49
1-E-5	1 00				8 18	1 09	8 48	19 15
1-F-6	1 12				4 12	4 30	15 00	24 54
TOTAL	5 09		09		39 25	42 49	48 48	136 20
DAILY AVERAGE								1 37
<u>FAMILY II</u>								
2-F-1	15 30				4 48			20 18
2-E-2	10 00							10 00
2-D-3	6 00				7 18			13 18
2-C-4	4 00				17 00			21 00
2-B-5	4 18				15 30			19 48
2-G-6	6 48				15 48			22 36
TOTAL	46 36				60 24			107 00
DAILY AVERAGE								1 16
<u>FAMILY III</u>								
3-H-1	4 45					1 55	24 35	31 15
3-I-2	4 25				8 30	18 20		31 15
3-J-3	6 15				8 00	20 15		34 30
TOTAL	15 25				16 30	40 30	24 35	97 00
DAILY AVERAGE								2 19

TABLE 7 — PREPARING MEALS
(Rooms Used and Amount of Time Spent)

Plan	Living Room h. m.	Dining Room h. m.	Kitchen h. m.	Bath Room h. m.	Master B.R. h. m.	Boy's B.R. h. m.	Girl's B.R. h. m.	TOTAL h. m.
<u>FAMILY I</u>								
1-A-1			13 21					13 21
1-B-2		1 40	14 05					15 45
1-C-3		1 24	14 05					15 29
1-D-4			14 18					14 18
1-E-5			15 30					15 30
1-F-6			17 05					17 05
TOTAL		3 04	88 24					91 28
DAILY AVERAGE								1 05
<u>FAMILY II</u>								
2-F-1			17 48					17 48
2-E-2			19 12					19 12
2-D-3			22 36					22 36
2-C-4			25 12					25 12
2-B-5			28 48					28 48
2-G-6			28 48					28 48
TOTAL			142 24					142 24
DAILY AVERAGE								1 42
<u>FAMILY III</u>								
3-H-1		1 15	15 15					16 30
3-I-2			15 30					15 30
3-J-3		35	22 30					23 05
TOTAL		1 50	53 15					55 05
DAILY AVERAGE								1 19

TABLE 8 -- BAKING
(Rooms Used and Amount of Time Spent)

<u>Plan</u>	<u>Living Room</u> <u>h. m.</u>	<u>Dining Room</u> <u>h. m.</u>	<u>Kitchen</u> <u>h. m.</u>	<u>Bath Room</u> <u>h. m.</u>	<u>Master B.R.</u> <u>h. m.</u>	<u>Boy's B.R.</u> <u>h. m.</u>	<u>Girl's B.R.</u> <u>h. m.</u>	<u>TOTAL</u> <u>h. m.</u>
<u>FAMILY I</u>								
1-A-1			2 30					2 30
1-B-2			2 05					2 05
1-C-3			3 30					3 30
1-D-4			3 20					3 20
1-E-5			49					49
1-F-6			55					55
TOTAL			13 09					13 09
DAILY AVERAGE								09
RECORD-PERIOD AVERAGE								2 12
<u>FAMILY II</u>								
2-F-1			1 30					1 30
2-E-2			1 00					1 00
2-D-3								
2-C-4								
2-B-5			2 18					2 18
2-G-6			5 18					5 18
TOTAL			10 06					10 06
DAILY AVERAGE								07
RECORD-PERIOD AVERAGE								1 41
<u>FAMILY III</u>								
3-H-1			1 05					1 05
3-I-2								
3-J-3			2 20					2 20
TOTAL			3 25					3 25
DAILY AVERAGE								05
RECORD-PERIOD AVERAGE								1 08

TABLE 9 -- EATING
(Rooms Used and Amount of Time Spent)

<u>Plan</u>	<u>Living Room h. m.</u>	<u>Dining Room h. m.</u>	<u>Kitchen h. m.</u>	<u>Bath Room h. m.</u>	<u>Master B.R. h. m.</u>	<u>Boy's B.R. h. m.</u>	<u>Girl's B.R. h. m.</u>	<u>TOTAL h. m.</u>
<u>FAMILY I</u>								
1-A-1	2 30		16 42					19 12
1-B-2	1 06	25 00	6 05					32 11
1-C-3	24	9 54	12 00	24		30		23 12
1-D-4	3 20		21 54	45				25 59
1-E-5	1 00		20 00		1 00			22 00
1-F-6	30		31 48			1 18	03	33 39
TOTAL	8 50	34 54	108 29	1 09	1 00	1 48	03	156 13
DAILY AVERAGE								1 52
<u>FAMILY II</u>								
2-F-1			19 06					19 06
2-E-2		30	9 36					10 06
2-D-3			16 18					16 18
2-C-4	30	15 00	1 30					17 00
2-B-5		15 30	1 18					16 48
2-G-6			20 36					20 36
TOTAL	30	31 00	68 24					99 54
DAILY AVERAGE								1 11
<u>FAMILY III</u>								
3-H-1		45	25 20					26 05
3-I-2		1 00	20 05		15			21 20
3-J-3	15	45	20 55					21 55
TOTAL	15	2 30	66 20		15			69 20
DAILY AVERAGE								1 39

TABLE 10 -- WASHING DISHES
(Rooms Used and Amount of Time Spent)

<u>Plan</u>	<u>Living Room h. m.</u>	<u>Dining Room h. m.</u>	<u>Kitchen h. m.</u>	<u>Bath Room h. m.</u>	<u>Master B.R. h. m.</u>	<u>Boy's B.R. h. m.</u>	<u>Girl's B.R. h. m.</u>	<u>TOTAL h. m.</u>
<u>FAMILY I</u>								
1-A-1			13 30					13 30
1-B-2			10 00					10 00
1-C-3			11 24					11 24
1-D-4			12 54					12 54
1-E-5			9 40					9 40
1-F-6			13 45					13 45
TOTAL			71 13					71 13
DAILY AVERAGE								51
<u>FAMILY II</u>								
2-F-1			8 18					8 18
2-E-2			8 00					8 00
2-D-3			10 18					10 18
2-C-4			11 00					11 00
2-B-5			13 48					13 48
2-G-6			8 42					8 42
TOTAL			60 06					60 06
DAILY AVERAGE								43
<u>FAMILY III</u>								
3-H-1			5 50					5 50
3-I-2			8 25					8 25
3-J-3			9 40					9 40
TOTAL			23 55					23 55
DAILY AVERAGE								34

TABLE 11 -- WASHING CLOTHES BY MACHINE
(Rooms Used and Amount of Time Spent)

Plan	Living Room <u>h. m.</u>	Dining Room <u>h. m.</u>	Kitchen <u>h. m.</u>	Bath Room <u>h. m.</u>	Basement <u>h. m.</u>	Hall <u>h. m.</u>	Utility <u>h. m.</u>	TOTAL <u>h. m.</u>
<u>FAMILY I</u>								
1-A-1			5 00					5 00
1-B-2						4 50		4 50
1-C-3				4 20				4 20
1-D-4					4 40			4 40
1-E-5			5 30					5 30
1-F-6				5 35				5 35
TOTAL			10 30	9 55	4 40	4 50		29 55
DAILY AVERAGE								21
RECORD-PERIOD AVERAGE								4 59
<u>FAMILY II</u>								
2-F-1				8 20				8 20
2-E-2			2 12					2 12
2-D-3					2 18			2 18
2-C-4				1 48				1 48
2-B-5						1 24		1 24
2-G-6							54	54
TOTAL			2 12	10 08	2 18	1 24	54	16 56
DAILY AVERAGE								12
RECORD-PERIOD AVERAGE								2 49
<u>FAMILY III</u>								
3-H-1							3 50	3 50
3-I-2			3 50					3 50
3-J-3							2 10	2 10
TOTAL			3 50				6 00	9 50
DAILY AVERAGE								14
RECORD-PERIOD AVERAGE								3 17

TABLE 12 -- DRYING CLOTHES
(Rooms Used and Amount of Time Spent)

<u>Plan</u>	<u>Living Room h. m.</u>	<u>Dining Room h. m.</u>	<u>Kitchen h. m.</u>	<u>Bath Room h. m.</u>	<u>Basement h. m.</u>	<u>Hall h. m.</u>	<u>Utility h. m.</u>	<u>TOTAL h. m.</u>
<u>FAMILY I</u>								
1-A-1			6 35					6 35
1-B-2						6 00		6 00
1-C-3				7 55				7 55
1-D-4					8 20			8 20
1-E-5			9 34					9 34
1-F-6				9 45				9 45
TOTAL			16 09	17 40	8 20	6 00		48 09
DAILY AVERAGE								34
RECORD-PERIOD AVERAGE								8 01
<u>FAMILY II</u>								
2-F-1								
2-E-2								
2-D-3								
2-C-4								
2-B-5								
2-G-6							42	42
TOTAL							42	42
DAILY AVERAGE								
RECORD-PERIOD AVERAGE								
<u>FAMILY III</u>								
3-H-1							2 35	2 35
3-I-2				2 40				2 40
3-J-3						2 30		2 30
TOTAL				2 40		2 30	2 35	7 45
DAILY AVERAGE								11
RECORD-PERIOD AVERAGE								2 35

TABLE 13 -- HAND LAUNDERING
(Rooms Used and Amount of Time Spent)

Plan	Living Room <u>h. m.</u>	Dining Room <u>h. m.</u>	Kitchen <u>h. m.</u>	Bath Room <u>h. m.</u>	Master B.R. <u>h. m.</u>	Boy's B.R. <u>h. m.</u>	Girl's B.R. <u>h. m.</u>	TOTAL <u>h. m.</u>
<u>FAMILY I</u>								
1-A-1				(No data)				
1-B-2								
1-C-3				05				05
1-D-4			38					38
1-E-5				05				05
1-F-6			45	25				1 10
TOTAL			1 23	35				1 58
DAILY AVERAGE								02
RECORD-PERIOD AVERAGE								24
<u>FAMILY II</u>								
2-F-1			48	1 30				2 18
2-E-2			2 06	48				2 54
2-D-3			2 00					2 00
2-C-4				15				15
2-B-5				15				15
2-G-6								
TOTAL			4 54	2 48				7 42
DAILY AVERAGE								06
RECORD-PERIOD AVERAGE								1 17
<u>FAMILY III</u>								
3-H-1	05		15					20
3-I-2				15				15
3-J-3				35				35
TOTAL	05		15	50				1 10
DAILY AVERAGE								02
RECORD-PERIOD AVERAGE								23

TABLE 14 -- IRONING
(Rooms Used and Amount of Time Spent)

Plan	Living Room <u>h. m.</u>	Dining Room <u>h. m.</u>	Kitchen <u>h. m.</u>	Basement <u>h. m.</u>	Utility <u>h. m.</u>	Boy's B.R. <u>h. m.</u>	Girl's B.R. <u>h. m.</u>	TOTAL <u>h. m.</u>
<u>FAMILY I</u>								
1-A-1			2 45					2 45
1-B-2		3 15						3 15
1-C-3			3 45					3 45
1-D-4			3 09					3 09
1-E-5								
1-F-6			4 45					4 45
TOTAL		3 15	14 24					17 39
DAILY AVERAGE								13
RECORD-PERIOD AVERAGE								2 56
<u>FAMILY II</u>								
2-F-1			18 00					18 00
2-E-2	6 30		8 30					15 00
2-D-3		17 00		4 00				21 00
2-C-4			10 18					10 18
2-B-5		10 30						10 30
2-G-6		8 18						8 18
TOTAL	6 30	35 48	36 48	4 00				83 06
DAILY AVERAGE								59
RECORD-PERIOD AVERAGE								13 51
<u>FAMILY III</u>								
3-H-1			2 25		05			2 30
3-I-2			2 15					2 15
3-J-3			1 00					1 00
TOTAL			5 40		05			5 45
DAILY AVERAGE								08
RECORD-PERIOD AVERAGE								1 55

TABLE 15 -- SEWING AND MENDING
(Rooms Used and Amount of Time Spent)

Plan	Living Room <u>h. m.</u>	Dining Room <u>h. m.</u>	Kitchen <u>h. m.</u>	Bath Room <u>h. m.</u>	Master B.R. <u>h. m.</u>	Utility Room <u>h. m.</u>	Girl's B.R. <u>h. m.</u>	TOTAL <u>h. m.</u>
<u>FAMILY I</u>								
1-A-1	2 45							2 45
1-B-2	1 36				30			2 06
1-C-3					15			15
1-D-4	1 20				30			1 50
1-E-5								
1-F-6	2 00							2 00
TOTAL	7 41				1 15			8 56
DAILY AVERAGE								06
RECORD-PERIOD AVERAGE								1 29
<u>FAMILY II</u>								
2-F-1	9 30				2 00			11 30
2-E-2	7 06	4 00			1 30			12 36
2-D-3	8 00	1 48						9 48
2-C-4	8 18							8 18
2-B-5	16 18							16 18
2-G-6	30 30							30 30
TOTAL	79 42	5 48			3 30			89 00
DAILY AVERAGE								1 04
RECORD-PERIOD AVERAGE								14 50
<u>FAMILY III</u>								
3-H-1						1 15		1 15
3-I-2	10				1 00			1 10
3-J-3	1 15		50					2 05
TOTAL	1 25		50		1 00	1 15		4 30
DAILY AVERAGE								06
RECORD-PERIOD AVERAGE								1 30

TABLE 16 -- HOUSE CLEANING
(Rooms Used and Amount of Time Spent)

Plan	Living Room <u>h. m.</u>	Dining Room <u>h. m.</u>	Kitchen <u>h. m.</u>	Bath Room <u>h. m.</u>	Master B.R. <u>h. m.</u>	Boy's B.R. <u>h. m.</u>	Girl's B.R. <u>h. m.</u>	TOTAL <u>h. m.</u>
<u>FAMILY I</u>								
1-A-1	7 00		2 00		3 15	2 40		14 55
1-B-2	3 24	1 50	1 30	35	1 45	2 10	1 54	13 08
1-C-3	5 02	1 30	2 30	1 35	2 50	2 25		15 52
1-D-4	3 10		2 15	50	1 55	2 00	1 33	11 43
1-E-5	4 08		1 12	1 30	2 40	1 45	1 42	12 57
1-F-6	3 22		2 00	2 30	2 05	2 00	2 03	14 00
TOTAL	26 06	3 20	11 27	7 00	14 30	13 00	7 12	82 35
DAILY AVERAGE								59
RECORD-PERIOD AVERAGE								13 45
<u>FAMILY II</u>						Children <u>B.R.</u>	Play & <u>Utility</u>	
2-F-1	2 06	42	2 24	2 24	4 00	4 48		16 24
2-E-2	2 12	42	1 42	1 54	3 12	5 36	30	15 48
2-D-3	1 48	48	2 18	1 48	2 54	3 00		12 36
2-C-4	1 24	1 24	1 48	2 48	1 24	1 12		10 00
2-B-5	2 00	2 12	30	2 00	3 18	4 00		14 00
2-G-6	1 36	1 24	42	3 00	5 06	3 24	36	15 48
TOTAL	11 06	7 12	9 24	13 54	19 54	22 00	1 06	84 36
DAILY AVERAGE								1 00
RECORD-PERIOD AVERAGE								14 06
<u>FAMILY III</u>							Utility & Hall	
3-H-1	2 30	15	30	1 15	1 10	1 55	25	8 00
3-I-2	1 30	40	1 25	40	55	1 20		6 30
3-J-3	2 00	25	1 30	40	1 35	1 50	40	8 40
TOTAL	6 00	1 20	3 25	2 35	3 40	5 05	1 05	23 10
DAILY AVERAGE								33
RECORD-PERIOD AVERAGE								7 43

TABLE 17 -- HOUSEHOLD BUSINESS
(Rooms Used and Amount of Time Spent)

Plan	Living Room h. m.	Dining Room h. m.	Kitchen h. m.	Bath Room h. m.	Master B.R. h. m.	Children B.R. h. m.	Utility	TOTAL
							h. m.	h. m.
<u>FAMILY I</u>								
1-A-1	2 10		30		25	30		3 35
1-B-2	5 30	1 40						7 10
1-C-3	4 36	55						5 31
1-D-4	5 00		2 50					7 50
1-E-5	1 00							1 00
1-F-6	20 55		08	25				21 28
TOTAL	39 11	2 35	3 28	25	25	30		46 34
DAILY AVERAGE								33
RECORD-PERIOD AVERAGE								7 46
<u>FAMILY II</u>								
2-F-1								
2-E-2								
2-D-3								
2-C-4								
2-B-5								
2-G-6		30						30
TOTAL		30						30
DAILY AVERAGE								
RECORD-PERIOD AVERAGE								05
<u>FAMILY III</u>								
3-H-1	3 10	1 30	5 00	25	1 00	1 45	20	13 10
3-I-2	15		15					30
3-J-3	40		2 20					3 00
TOTAL	4 05	1 30	7 35	25	1 00	1 45	20	16 40
DAILY AVERAGE								24
RECORD-PERIOD AVERAGE								5 33

TABLE 18 -- ENTERTAINING
(Rooms Used and Amount of Time Spent)

Plan	Living Room <u>h. m.</u>	Dining Room <u>h. m.</u>	Kitchen <u>h. m.</u>	Bath Room <u>h. m.</u>	Master B.R. <u>h. m.</u>	Boy's B.R. <u>h. m.</u>	Girl's B.R. <u>h. m.</u>	TOTAL <u>h. m.</u>
<u>FAMILY I</u>								
1-A-1	37 00		11 00					48 00
1-B-2	7 00					1 15	1 06	9 21
1-C-3	15 00		2 00			35		17 35
1-D-4	10 18							10 18
1-E-5	14 06		50			3 30	1 42	20 08
1-F-6	7 06		1 00			1 18	2 42	12 06
TOTAL	90 30		14 50			6 38	5 30	117 28
DAILY AVERAGE								1 24
RECORD PERIOD AVERAGE								19 35
<u>FAMILY II</u>								
2-F-1								
2-E-2	5 00							5 00
2-D-3								
2-C-4	1 00							1 00
2-B-5	1 00							1 00
2-G-6								
TOTAL	7 00							7 00
DAILY AVERAGE								05
RECORD PERIOD AVERAGE								1 10
<u>FAMILY III</u>								
3-I-1	5 00	50	05	05				6 00
3-I-2	1 15		10					1 25
3-J-3	9 10	45						9 55
TOTAL	15 25	1 35	15	05				17 20
DAILY AVERAGE								25
RECORD-PERIOD AVERAGE								5 47

TABLE 19 -- READING
(Rooms Used and Amount of Time Spent)

Plan	Living Room h. m.	Dining Room h. m.	Kitchen h. m.	Bath Room h. m.	Master B.R. h. m.	Boy's B.R. h. m.	Girl's B.R. h. m.	TOTAL h. m.
<u>FAMILY I</u>								
1-A-1	18 30		30					19 00
1-B-2	2 49	6 09			30			9 28
1-C-3	21 42	1 00	3 40		54	1 00		28 16
1-D-4	20 24		6 15					26 39
1-E-5	25 30		1 30		6 36	1 45		35 21
1-F-6	36 24		4 54		4 35	20		46 13
TOTAL	125 19	7 09	16 49		12 35	3 05		164 57
DAILY AVERAGE								1 58
<u>FAMILY II</u>								
2-F-1	21 30		2 30		30	2 30	1 48	28 48
2-E-2	28 00		1 30		2 30	2 00		34 00
2-D-3	32 24	8 48			7 48			49 00
2-C-4	35 30				2 18			37 48
2-B-5	25 48							25 48
2-G-6	22 18				3 30			25 48
TOTAL	165 30	8 48	4 00		16 36	4 30	1 48	201 12
DAILY AVERAGE								2 24
<u>FAMILY III</u>								
3-H-1	42 00	20	20	1 00	30			44 10
3-I-2	25 35				2 05			27 40
3-J-3	15 00		3 00	30	5 20	1 30		25 20
TOTAL	82 35	20	3 20	1 30	7 55	1 30		97 10
DAILY AVERAGE								2 19

TABLE 20 -- LETTER WRITING
(Rooms Used and Amount of Time Spent)

Plan	Living Room <u>h.</u> <u>m.</u>	Dining Room <u>h.</u> <u>m.</u>	Kitchen <u>h.</u> <u>m.</u>	Bath Room <u>h.</u> <u>m.</u>	Master B.R. <u>h.</u> <u>m.</u>	Boy's B.R. <u>h.</u> <u>m.</u>	Girl's B.R. <u>h.</u> <u>m.</u>	TOTAL <u>h.</u> <u>m.</u>
<u>FAMILY I</u>								
1-A-1								
1-B-2								
1-C-3								
1-D-4								
1-E-5								
1-F-6								
TOTAL								
DAILY AVERAGE								
<u>FAMILY II</u>								
2-F-1	3 18	30						3 48
2-E-2	2 00							2 00
2-D-3	2 30							2 30
2-C-4	4 00							4 00
2-B-5	4 18							4 18
2-G-6	2 00							2 00
TOTAL	18 06	30						18 36
DAILY AVERAGE								13
RECORD-PERIOD AVERAGE								3 06
<u>FAMILY III</u>								
3-R-1	1 55							1 55
3-N-2	2 30		5 00					7 30
3-J-3			1 00					1 00
TOTAL	4 25		6 00					10 25
DAILY AVERAGE								15
RECORD-PERIOD AVERAGE								3 28

TABLE 21 -- RADIO LISTENING
(Rooms Used and Amount of Time Spent)

Plan	Living Room h. m.	Dining Room h. m.	Kitchen h. m.	Bath Room h. m.	Master B.R. h. m.	Boy's B.R. h. m.	Girl's B.R. h. m.	TOTAL h. m.
<u>FAMILY I</u>								
1-A-1	7 12		1 45					8 57
1-B-2	41 00							41 00
1-C-3	21 48	5 30	2 19					29 37
1-D-4	46 36		5 06					51 42
1-E-5	15 45		4 45					20 30
1-F-6	41 05		28 45					69 50
TOTAL	173 26	5 30	42 40					221 36
DAILY AVERAGE								2 38
<u>FAMILY II</u>								
2-F-1								
2-E-2	2 18				1 00			3 18
2-D-3	1 18	48						2 06
2-C-4	5 30	7 00	9 00		3 48			25 18
2-B-5	41 36							41 36
2-G-6	19 18				48 00			67 18
TOTAL	70 00	7 48	9 00		52 48			139 36
DAILY AVERAGE								1 40
<u>FAMILY III</u>								
3-H-1	11 20		55	15				12 30
3-I-2	1 10							1 10
3-J-3	3 55		15			2 15		6 25
TOTAL	16 25		1 10	15		2 15		20 05
DAILY AVERAGE								29

TABLE 22 -- CHILDREN'S PLAY
(Rooms Used and Amount of Time Spent)

Plan	Living Room <u>h. m.</u>	Dining Room <u>h. m.</u>	Kitchen <u>h. m.</u>	Bath Room <u>h. m.</u>	Master B.R. <u>h. m.</u>	Boy's B.R. <u>h. m.</u>	Girl's B.R. <u>h. m.</u>	TOTAL <u>h. m.</u>
<u>FAMILY I</u>								
1-A-1	53 54		2 54			17 21		74 09
1-B-2	28 00	6 36	45	1 30	45	17 18	17 42	72 36
1-C-3	36 18	3 00	8 00	5 06	3 15	13 36		69 15
1-D-4	56 24		5 24	1 48	1 00	12 06	9 06	85 48
1-E-5	53 42		3 24	1 20		2 42	6 00	67 08
1-F-6	28 48		7 15	2 12	1 54	27 24	27 00	94 33
TOTAL	257 06	9 36	27 42	11 56	6 54	90 27	59 48	463 29
DAILY AVERAGE								5 31
<u>FAMILY II</u>								
					<u>Play Room</u>			
2-F-1	35 18		2 00				30	37 48
2-E-2	14 54				46 18			61 12
2-D-3	18 30	1 48						20 18
2-C-4	40 30		77 45				6 15	124 30
2-B-5	101 18	18 30						119 48
2-G-6	65 00	33 18						98 18
TOTAL	275 30	53 36	79 45		46 18		6 45	461 54
DAILY AVERAGE								5 30
<u>FAMILY III</u>								
3-H-1	39 40	1 05	5 45	1 30	2 30	1 55		52 25
3-I-2	27 05	2 05	21 30	2 10	2 05	6 55		61 50
3-J-3	16 35	4 05	12 40	30	2 05	3 50		39 45
TOTAL	83 20	7 15	39 55	4 10	6 40	12 40		154 00
DAILY AVERAGE								3 40

ROOM USE

Introduction and Methodology

An important factor in planning houses is the use of the space within the various rooms. In many instances the homeowner expects to use a room in a certain way but finds by experience that he actually uses the space in an entirely different manner. The actual use of rooms by the family was, therefore, a major point of the study.

The following analysis is based on the daytime activity tables of the previous section, FAMILY ACTIVITIES. Tabulations do not include sleeping time other than afternoon napping. House-cleaning time and radio-listening time are not included in the analysis.

Representative room-use times are presented as daily averages whenever the specific activity is primarily a daily activity. If the activity occurs only two or three times weekly, the representative times are presented on a weekly basis. Representative times are not given for activities that were done at irregular intervals.

When a given activity is not recorded in a specific record-period,^{*} that record-period is eliminated from the computation of representative average times for room use. The intent is to determine the duration of the usual period of room use for each activity. When two or more persons are performing the same activity in the same room, the time is reported only once. If more than one activity is being carried on at the same time in the same room, both periods are recorded.

(*) The 14-day period in the middle of each plan period, during which each family logged its activities.

USE OF LIVING-DINING ROOM

Of all the rooms in the house, the living-dining room, as might be expected, received the heaviest daytime use. Family I used the room approximately 7 hours and 5 minutes per day; Family II, 8 hours and 46 minutes daily; and Family III, 5 hours and 36 minutes per day. The amount the room was used varied with the season, the families' living pattern, and the house plan. For example, during the warmer period of the year, the children played out-of-doors more and, as a result, there was a corresponding reduction of playtime in the living room. Families I and III used the living-dining area primarily for recreation and children's play; Family II also used the living room for various household tasks. The house plan, of course, affected the room use--for example, in Plan E, meals were eaten in the dinette as there was no other suitable place.

A schedule of the uses of the living-dining room is given below.

TABLE 23 -- ACTIVITIES CARRIED ON IN LIVING-DINING ROOM
(In descending order of usage for all test periods)

<u>Family I</u>	<u>Family II</u>	<u>Family III</u>
Children's Play	Children's Play	Children's Play
Reading	Reading	Reading
Entertaining	Sewing and Mending	
Eating	Napping	Entertaining
Household Business	Ironing	Napping
	Eating	
Sewing and Mending	Letter Writing	Caring for Children
Napping	Entertaining	Household Business
Ironing	Personal Grooming	Dressing and Undressing
Preparing Meals	Caring for Children	Letter Writing
Personal Grooming	Household Business	Eating
Dressing and Undressing		Preparing Meals
		Sewing and Mending
		Personal Grooming

Primary Activities

It is apparent that one of the major uses of the living room was for an indoor play area. The importance of this area is pointed out in the following tabulation which shows the proportion of total children's playtime which was spent in the living-dining room.

TABLE 24 -- PORTION OF TOTAL CHILDREN'S PLAYTIME SPENT IN LIVING-DINING ROOM*

1-A-1	73%	2-F-1	93%	3-H-1	78%
1-B-2	48%	2-E-2	100%	3-I-2	47%
1-C-3	57%	2-D-3	100%	3-J-3	52%
1-D-4	65%	2-C-4	85%		
1-E-5**	80%	2-E-5**	100%		
1-F-6	30%	2-G-6	100%		

As can be seen from Table 22 and Table 24, the play habits of the children of the different families varied considerably. Apparently, the pattern was strongly influenced by the mothers' desires and the children's ages.

The mother of Family I wanted her children to play in their own bedroom, and this idea was followed to some extent. Nevertheless, the living room (including dining area and play alcove) was the prime children's play area in four plans, and was nearly as important in a fifth plan. Only in Plan 1-F-6, which was the family's own design, did the children play predominantly in their own bedroom. Although this plan shows only 30 per cent of the playtime is in the living room, the picture changes if overlapping play in the bedrooms is assumed. This would bring it up to 43 per cent.

The heaviest use of the living room from a percentage standpoint occurred in Plan E, which was the plan with the special playroom alcove off the living room. Ordinarily the children of Family I played in several areas of the house; in Plan E, play was concentrated in the living-room play area.

The living room was used for play 3 hours and 11 minutes daily, based on the entire group of record-periods for Family I. Actually, Mother I appeared to resist the idea of using the living room for a play area. Presumably, this is primarily because of her desire to keep one room "straight" for receiving visitors. In other words, use of the living room as a reception room was of primary importance to her.

Mother II was different in this respect. Playing in the living room did not appear to concern her. It is possible that this was because she did not anticipate many visitors and found no reason to maintain the living room as a reception room. On the average, the living room was used 3 hours and 55 minutes daily for children's play.

(*) The importance of the living room as a play area may be underemphasized by this table due to the method for recording the data. When children play simultaneously in separate bedrooms, time is recorded for each room; when they play together in one room, time is recorded once only. If the times in the two single bedrooms are considered as overlapping, the figures in Table 23 would be varied to read: For 1-B-2, 63%; for 1-D-4, 74%; for 1-E-5, 83%; for 1-F-6, 43%.

(**) Includes playroom alcove which could be separated from the living room by accordion doors. Actual time spent in playroom in 1-E-5 is not recorded; in 2-E-2, 46 hours and 18 minutes, or 75 per cent of total children's playtime was recorded in the playroom.

The living room was also used considerably as a play area by Family III. No other room was used as much during any record-period. During the three record-periods, the living-dining area was used as a play area an average of 2 hours and 9 minutes daily. This average is undoubtedly lower than that of the other families due to the fact that two of the three record-periods were during the warmer months when the children were playing out-of-doors.

All three families used the living room extensively for reading. Family I averaged 1 hour and 35 minutes daily; Families II and III averaged 2 hours and 5 minutes, and 1 hour and 58 minutes respectively. The majority of all reading was done in this room.

All families entertained irregularly. Family I entertained the most, reporting time in every record-period. Minimum time reported for a two-weeks' record-period was 7 hours; maximum was for the month of December when the living room was used 37 hours for this purpose. Over the entire six record-periods, the living room was in use for entertaining an average of approximately 1 hour and 5 minutes daily. Eliminating the high month of December, the average was 46 minutes daily. Family II entertained very little, only 7 hours being reported for the entire period records were kept. For two periods, no entertaining was recorded. Family III reported 5 hours and 50 minutes, 1 hour and 15 minutes, and 9 hours and 55 minutes for three periods, the average per day being 24 minutes.

Secondary and Minor Activities

There was a wide variation in the secondary use of the living room. The living room was used by all families for afternoon napping, but the use was highly irregular, and conclusions cannot be drawn as to a daily average.

Family I recorded some time for eating in the dinette portion of the living room for every plan. For Plan 1-B-2, when nearly all meals were eaten in the dinette, the daily average was 1 hour and 52 minutes. Family II reported eating in the living-dining room most of the time for Plans 2-B-5 and 2-C-4. The daily average for these two plans was 1 hour and 6 minutes. Family III ate only occasionally in the living-dining room.

Family I was the only family which used the living-room to conduct most of their family business. Over five record-periods,* the average per day was 18 minutes.

Family I and Family III did a relatively small amount of sewing and mending. Family I used the living room most of the time for this purpose; Family III did not. Family II did much more sewing and mending, and most of this was done in the living-dining area. The daily average was slightly more than an hour.

(*) For the record-period for Plan 1-F-6, 20 hours and 55 minutes of household business was recorded. During this period the family was negotiating for their new house. The period was not considered typical.

Family I reported no letter writing; Family III reported letter writing in two of three record-periods. Family II used only the living-dining room for this purpose, averaging 13 minutes daily.

The dinette area was used three periods for ironing and the living room one period by Family II. For the two periods in which ironing was done only in the dinette, the daily average was 40 minutes.

USE OF KITCHEN

The second most heavily used room during the day in the test plans was the kitchen. The primary uses of the kitchen were for preparing meals, baking, eating, and washing dishes. Secondary uses included children's play, clothes washing (by machine), clothes drying (by machine), and ironing. Other uses included reading, entertaining, personal grooming, household business, caring for children, letter writing, hand laundering, and sewing and mending.

When the total of all time spent in the kitchen (exclusive of clothes washing and clothes drying) was averaged on a daily basis, it was found that Family III, with 5 hours and 19 minutes daily, was the heaviest user of the kitchen, followed by Family I with 4 hours and 25 minutes, and Family II with 4 hours and 51 minutes.

As indicated by the tabulation of room-use times, the use of the kitchen varied widely with the family and with the plan. Provision for eating space and laundry equipment in the kitchen increased the use of the room in Plans A and E. In some instances, the addition of the ironing activity kept the room busier than usual.

To gain a picture of the use of the kitchen, representative room-use times have been calculated. In some instances, these are daily averages for all the record-periods; in other cases, representative periods have been chosen for averages.

Primary Activities

Food preparation is a daily activity.* There was a surprising fluctuation in the amount of food-preparation time from month to month. For example, Family II increased from 19 hours and 18 minutes in Plan F to 34 hours and 6 minutes in Plan G. There does not seem to be any explanation for this fact. The average daily food-preparation time, including baking, was as follows: For Family I, 1 hour and 13 minutes; for Family II, 1 hour and 49 minutes; and for Family III, 1 hour and 21 minutes.

Certain features of Plans B and C changed the usual pattern of eating most meals in the kitchen. Family I and Family II could not eat normally in the kitchen of Plan B.** Also, these families ate fewer meals than usual in the kitchen in Plan C.+ Eliminating Plans B and C from the calculations of kitchen-eating time, the average daily time spent in the kitchen while eating becomes for Family I, 1 hour and 37 minutes; for Family II, 1 hour and 10 minutes; and for Family III, 1 hour and 35 minutes.

(*) For purposes of these computations, the time used in baking has been added to the food-preparation time.

(**) There was no space for a table; some meals were eaten while standing.

(+) Kitchen table was removed for a portion of the test period. Space gained was intended for children's play space.

Washing dishes is a daily activity; the daily averages are listed in the table below.

TABLE 25 -- PRIMARY ACTIVITIES IN KITCHEN
(Representative daily times in hours and minutes)

	Family I	Family II	Family III
	<u>h.</u> <u>m.</u>	<u>h.</u> <u>m.</u>	<u>h.</u> <u>m.</u>
Food Preparation and Baking	1 13	1 49	1 21
Eating	1 37	1 10	1 35
Washing Dishes	— <u>51</u>	— <u>43</u>	— <u>34</u>
Totals	3 41	3 42	3 30

It is interesting to note that despite the variance in times spent on the different activities and despite the month-to-month changes, the mother of each family spent approximately the same amount of time each day in kitchen activities.

Secondary Activities

Placement of the washing machine and the clothes dryer in the kitchen of Plans A and E introduced the laundry function to the kitchen.

Washing and drying of clothes was done in the kitchen in Plans A and E by Family I, and washing of clothes was done in the kitchen in Plan E by Family II.

For clothes washing in the kitchen, Family I averaged 2 hours and 38 minutes weekly and Family II averaged 1 hour and 6 minutes in Plans A and E.* Family I washed four or five times a week--this would mean the kitchen was in use from 30 to 40 minutes each time the washer was used. Family II used the washer two to three times weekly; in this case the kitchen-use time was 20 to 30 minutes per washday.

Family II did not use the dryer in Plan E; Family I used it in both Plans A and E, and averaged 4 hours and 2 minutes weekly during these record-periods. This time is not significant as the machine operated unattended during some of this time.

The mothers differed in their selection of the kitchen as the place to do their ironing. The mother of Family III did all but 5 minutes of her ironing in the kitchen. The mother of Family I used the kitchen in Plans A, C, D, and F, and the mother of Family II used the kitchen in Plans C, E and F. (She also used both the dining room and basement in Plan D.)

(*) Direct comparisons between families are not valid due to a change in the method of recording. Final method of recording (for Family III) involved time used in sorting clothes and loading the machine; original method of recording included some time during which the machine operated unattended.

On the basis of times recorded for ironing in the kitchen in these plans, Family I averaged 1 hour and 48 minutes weekly, and Family III averaged 57 minutes weekly. The mother of Family II did a great deal more ironing than the other mothers, averaging 6 hours and 8 minutes weekly.

The effect of ironing on the use of kitchen depended much upon the way in which the mother did her ironing--on an everyday basis or periodically through the week. Assuming that the ironing was done three times each week, the heaviest use of the kitchen was by Family II with each period of use amounting to approximately 2 hours and 20 minutes.

The children of both Family I and Family III played regularly in the kitchen; the children of Family II did not. There appears to be some correlation between the space in the kitchen and the amount of time the children spent in the kitchen. The kitchen of Plan B was very small--the amount of play in this kitchen was negligible. Heaviest play was in the kitchen of Plans C and I, plans in which the children could play at the kitchen table without interfering with the routine in the kitchen.*

The use of the kitchen varied with the various plans and such variance reduces the value of any average value which can be obtained. The five record-periods (excluding Plan B), the children of Family I played an average of 23 minutes each day in the kitchen. The children of Family III used the kitchen more extensively; they averaged 57 minutes a day. Family II averaged 5 hours and 33 minutes a day in Plan C; other kitchen play was negligible.

Minor Activities

Family II seldom used the kitchen for anything but food preparation, eating, dishwashing, clothes washing, and ironing. On the other hand, Families I and III used the kitchen regularly for other activities although the total time spent was small. Both Family I and Family III recorded time in the kitchen for caring for children and for personal grooming. The amounts were small. For personal grooming, Family I averaged 6 minutes; Family III averaged 8 minutes daily. The time recorded by Family I for children's care averaged 2 minutes daily; for Family III, it was 9 minutes.

The kitchen was also used for activities, but these occurred sporadically. Included were reading, entertaining, household business, hand laundering, letter writing, dressing and undressing, and sewing and mending.

(*) Kitchen C was especially planned for kitchen play. The mother of Family I objected to the arrangement, maintaining that the children should play in the bedroom. It was used heavily by Family II.

USE OF BATHROOM

As might be expected, the major uses of the bathroom were for personal grooming, caring for children, bathing, and dressing and undressing. Secondary uses were children's play and hand laundering. The average time the bathroom was in use each day (exclusive of washing and drying clothes by machine) is as follows: Family I, 2 hours and 33 minutes; Family II, 1 hour and 52 minutes; Family III, 1 hour and 59 minutes.

The difference in the way the families used the bathroom is shown in the table below.

TABLE 26 -- WAYS FAMILIES USE BATHROOM
(Representative daily time in hours and minutes spent for various activities exclusive of washing and drying clothes by machine)

	Family I	Family II	Family III
	<u>h. m.</u>	<u>h. m.</u>	<u>h. m.</u>
Personal Grooming	1 39	48	55
Caring for Children	24	26	16
Bathing	28*	21	30
Dressing and Undressing	irregular	17**	09
Children's Play	10**	-	06
Hand Laundering	irregular	irregular	irregular

In five plans, the laundry was designed as part of the bathroom. This arrangement, of course, increased the use of the bathroom. The amount of this increase is tabulated below.

TABLE 27 -- USE OF LAUNDRY FACILITIES IN BATHROOM
(Representative daily time spent for washing and drying clothes by machine)

	Family I	Family II	Family III
Washing by machine	21 min.	22 min.	17 min.
Drying by machine	38 min.	-	11 min.

From this table it can be seen that the bathroom is occupied from 1/2 to 1 hour more daily if it is to function as a laundry room as well as a bathroom. Assuming that the laundry might be done three times weekly rather than daily, the added time in the bathroom on laundry days might be from 1 to 1-3/4 hours. It should be possible to place this added burden on the bathroom without undue interference with its standard usage. The above assumptions are based on the use of automatic laundry equipment.

(*) For four record-periods only.

(**) For five record-periods only.

USE OF CHILDREN'S BEDROOMS

The daytime uses of the children's bedrooms are recorded in Table 31, and daily averages for the various room uses are shown in Table 27 below. In compiling times for Table 31, the following method was used. For plans with three bedrooms, the times recorded in the children's two bedrooms were totaled. (This method of recording may result in a slight overemphasis of some activities when there were two bedrooms for the children. This might particularly be the case for Plans 1-B-2 and 1-F-6 when the children played in their bedrooms for a substantial total.

There was no consistent pattern in the use of the children's bedrooms. The records show these approximate averages for daily use: Family I, 3 hours and 40 minutes; Family II, 51 minutes; Family III, 2 hours and 48 minutes.

The major portion of the daytime use by Family I was children's play, an average of 1 hour and 49 minutes, and napping 1 hour and 5 minutes. Family III also used the room for napping. This accounted for an average of 1 hour and 33 minutes daily. The major use of the children's bedrooms by Family II was for dressing and undressing, which took an average of 40 minutes daily.

The following table shows a comparison of the average time the children's rooms were used for various purposes during the day.

TABLE 28 -- DAYTIME ACTIVITIES IN CHILDREN'S BEDROOMS
(Average daily time in hours and minutes spent for various activities)

	Family I	Family II	Family III
	<u>h.</u> <u>m.</u>	<u>h.</u> <u>m.</u>	<u>h.</u> <u>m.</u>
Children's Play	1 49	05	18
Napping	1 05	-	1 33
Dressing and Undressing	23*	40	32
Caring for Children	08	irregular	19
Personal Grooming	05	-	irregular

Other activities which were recorded included entertaining (of other children), reading, and eating, but no pattern of room use could be established as far as these activities were concerned.

On the basis of the data collected from these three families, one may deduce that it is of primary importance to plan the children's bedrooms for napping, and dressing and undressing. Planning for children's play must be considered as of secondary importance since two out of the three families used the bedrooms a relatively small amount for this purpose.

(*) Based on five record-periods.

USE OF MASTER BEDROOM

Family I used the master bedroom during the day an average of 1 hour and 27 minutes daily; Family II, 1 hour and 46 minutes daily; and Family III, approximately 1 hour and 10 minutes. The greatest portion of the use of the bedroom was related to personal care items, particularly napping, and dressing and undressing.

Family I averaged about 33 minutes a day for dressing and undressing,* Family II averaged about 45 minutes daily, and Family III averaged approximately 26 minutes per day.

The master bedroom was often used for the afternoon nap; however, this was done irregularly and other rooms were often used in the same record-period. The greatest daytime use of the master bedroom by Family I occurred in Plan C; the daily average for this period was about 1 hour daily. Plan C was also the most heavily used by Family II; the daily average in this case was 1 hour and 13 minutes. Family III averaged about 36 minutes daily for Plan I.**

Family I used the master bedroom an average of 15 minutes a day for personal grooming; the other families used the bedroom a negligible amount for this purpose.

Some reading was done in the master bedroom by all families--6 hours and 36 minutes was reported for Plan E by Family I. This was the largest reported and amounted to about 1/2 hour daily for this period.

The bedroom was used for other activities including children's play, sewing and mending, eating, and household business, but the time spent in these activities was negligible.

(*) For five record-periods only.

(**) Plan I was very similar to Plan C. It appears to be purely coincidental that families reported their longest napping time in the same or similar plans.

TABLE 29 -- LIVING-DINING ROOM
(Activity Performed and Amount of Time Spent in Hours and Minutes)

Plan	Napping h. m.	Eating h. m.	Ironing h. m.	Sewing and Mending h. m.	Household Business h. m.	Enter- taining h. m.	Reading h. m.	Letter Writing h. m.	Children's Play h. m.	Total* h. m.
1-A-1		2 30		2 45	2 10	37 00	18 30		53 54	116 49
1-B-2	1 48	26 06	3 15	1 36	7 10	7 00	8 58		34 36	92 24
1-C-3		10 18			5 31	15 00	22 42		39 18	94 13
1-D-4	1 09	3 20		1 20	5 00	10 18	20 24		56 24	97 55
1-E-5	1 00	1 00			1 00	14 06	25 30		53 42	96 18
1-F-6	1 12	30		2 00	20 55	7 06	36 24		28 48	97 55
	5 09	43 44	3 15	7 41	41 46	90 30	132 28		266 42	595 34
2-F-1	15 30			9 30			21 30	3 48	35 18	86 06
2-E-2	10 00	30	6 30	11 06		5 00	28 00	2 00	14 54	78 30
2-D-3	6 00		17 00	9 48			41 12	2 30	20 18	96 48
2-C-4	4 00	15 30		8 18		1 00	35 30	4 00	40 30	108 48
2-B-5	4 18	15 30	10 30	16 18		1 00	25 48	4 18	119 48	197 30
2-G-6	6 48		8 18	30 30	30		22 18	2 00	98 18	168 42
	46 36	31 30	42 18	85 30	30	7 00	174 18	18 36	329 06	736 24
3-H-1	4 45	45			4 40	5 50	42 20	1 55	40 45	112 42
3-I-2	4 25	1 00		10	15	1 15	25 35	2 30	29 10	66 50
3-J-3	6 15	1 00		1 15	40	9 55	15 00		20 40	55 35
	15 25	2 45		1 25	5 35	17 00	82 55	4 25	90 35	235 07

(*) Totals also include minor time for Dressing and Undressing, Personal Grooming, Caring for Children, Preparing Meals, and Hand Laundering.

TABLE 30 -- KITCHEN
(Activity Performed and Amount of Time Spent in Hours and Minutes)

Plan	Preparing Meals and Baking	Caring for Children	Eating	Washing Dishes	Washing Clothes By Machine	Drying Clothes	Ironing	Household Business	Children's Play	Total *
	<u>h.</u> <u>m.</u>	<u>h.</u> <u>m.</u>	<u>h.</u> <u>m.</u>	<u>h.</u> <u>m.</u>	<u>h.</u> <u>m.</u>	<u>h.</u> <u>m.</u>	<u>h.</u> <u>m.</u>	<u>h.</u> <u>m.</u>	<u>h.</u> <u>m.</u>	<u>h.</u> <u>m.</u>
1-A-1	15 51	1 05	16 42	13 30	5 00	6 35	2 45	30	2 54	78 07
1-B-2	16 10	20	6 05	10 00					45	34 20
1-C-3	17 35	15	12 00	11 24			3 45		8 00	59 58
1-D-4	17 38	24	21 54	12 54			3 09	2 50	5 24	72 30
1-E-5	16 19	09	20 00	9 40	5 30	9 34			3 24	67 53
1-F-6	18 00	40	31 48	13 45			4 45	08	7 15	85 24
	101 33	2 53	108 29	71 13	10 30	16 09	14 24	3 28	27 42	398 12
2-F-1	19 18	30	19 06	8 18			18 00		2 00	70 30
2-E-2	20 12		9 36	8 00	2 12		8 30			52 36
2-D-3	22 36		16 18	10 18						51 12
2-C-4	25 12		1 30	11 00			10 18		77 45	126 00
2-B-5	31 06		1 18	13 48						46 12
2-G-6	34 06		20 36	8 42						63 24
	152 30	30	68 24	60 06	2 12		36 48		79 45	409 54
3-H-1	16 20	2 00	25 20	5 50			2 25	5 00	5 45	63 50
3-I-2	15 30	2 45	20 05	8 25			2 15	15	21 30	76 55
3-J-3	24 50	1 45	20 55	9 40			1 00	2 20	12 40	82 50
	56 40	6 30	66 20	23 55			5 40	7 35	39 55	223 35

(*) Totals also include minor time for Dressing and Undressing, Personal Grooming, Napping, Hand Laundering, Sewing and Mending, Entertaining, Reading, and Letter Writing.

TABLE 31 -- BATHROOM
(Activity Performed and Amount of Time Spent in Hours and Minutes)

Plan	Dressing and Undressing h. m.	Bathing h. m.	Personal Grooming h. m.	Caring for Children h. m.	Hand Laundering h. m.	Children's Play h. m.	Total* h. m.	Washing Clothes By Machine h. m.	Drying Clothes h. m.	Total h. m.
1-A-1			20 38	7 24			28 02			
1-B-2	49		26 36	6 30		1 30	35 25			
1-C-3	40	6 50	21 38	5 24	05	5 06	40 07	4 20	7 55	12 15
1-D-4	12	7 15	21 30	5 05		1 48	36 35			
1-E-5		6 00	24 45	3 24	05	1 20	35 34			
1-F-6	05	6 25	23 24	5 15	25	2 12	38 11	5 35	9 45	15 20
	1 46	26 30	138 31	33 02	35	11 56	213 54	9 55	17 40	27 35
2-F-1		4 48	14 54	8 30	1 30		29 42	8 20		8 20
2-E-2	1 30	4 30	10 18	5 42	48		22 48			
2-D-3	6 30	7 48	7 24	7 48			29 30			
2-C-4	6 48	5 00	11 36	8 30	15		32 09	1 48		1 48
2-B-5	3 00	4 30	10 00	4 00	15		21 45			
2-G-6	1 48	3 30	12 48	2 18			20 24			
	19 36	30 06	67 00	36 48	2 48		156 18	10 08		10 08
3-H-1	40	6 30	17 56	1 30		1 30	29 36			
3-I-2	45	8 30	11 30	5 20	15	2 10	28 30	3 50	2 40	6 30
3-J-3	4 40	6 10	9 05	4 05	35	30	25 35			
	6 05	21 10	38 31	10 55	50	4 10	83 41	3 50	2 40	6 30

(*) Totals also include minor time for Eating, Household Business, Entertaining, and Reading.

TABLE 32 -- CHILDREN'S BEDROOM(S)
(Activity Performed and Amount of Time Spent in Hours and Minutes)

Plan	Undressing and Dressing h. m.	Personal Grooming h. m.	Caring for Children h. m.	Napping h. m.	Enter- taining h. m.	Reading h. m.	Children's Play h. m.	Total* h. m.
1-A-1		2 55	1 15	18 05			17 21	40 06
1-B-2	7 08	06	2 05	12 45	2 21		35 00	59 25
1-C-3	6 05	1 05		16 40	35	1 00	13 36	39 31
1-D-4	5 13	55	2 33	14 40			21 12	44 33
1-E-5	2 09	1 12	2 03	9 57	5 12	1 45	8 42	31 00
1-F-6	<u>5 48</u>	<u>1 27</u>	<u>3 54</u>	<u>19 30</u>	<u>4 00</u>	<u>20</u>	<u>57 24</u>	<u>93 44</u>
	26 23	7 40	11 50	91 37	12 08	3 05	153 15	308 19
2-F-1	11 18		54			4 18	30	17 00
2-E-2	11 18		1 00			2 00		14 18
2-D-3	10 00							10 00
2-C-4	5 48		15				6 15	12 18
2-B-5	8 30							8 30
2-G-6	<u>9 12</u>		<u>30</u>					<u>9 42</u>
	56 06		2 39			6 18	6 45	71 48
3-H-1	10 17	40	6 35	26 30			1 55	47 42
3-I-2	6 50		2 49	18 20			6 55	34 54
3-J-3	<u>5 50</u>		<u>3 45</u>	<u>20 15</u>		<u>1 30</u>	<u>3 50</u>	<u>35 10</u>
	22 57	40	13 09	65 05		1 30	12 40	117 46

(*) Totals also include minor time for Eating, and Household Business.

TABLE 33 -- MASTER BEDROOM
(Activity Performed and Amount of Time Spent in Hours and Minutes)

Plan	Dressing and Undressing h. m.	Personal Grooming h. m.	Caring for Children h. m.	Napping h. m.	Sewing and Mending h. m.	Reading h. m.	Children's Play h. m.	Total* h. m.
1-A-1		7 50		4 45				13 00
1-B-2	6 30	2 00		4 05	30	30	45	14 20
1-C-3	7 20	1 05	09	14 05	15	54	3 15	27 03
1-D-4	6 45	2 50	15	4 00	30		1 00	15 20
1-E-5	7 50	4 45	24	8 18		6 36		28 53
1-F-6	<u>9 30</u>	<u>2 35</u>	<u>18</u>	<u>4 12</u>		<u>4 35</u>	<u>1 54</u>	<u>23 04</u>
	37 55	21 05	1 06	39 25	1 15	12 35	6 54	121 40
2-F-1	9 36	3 30		4 48	2 00	30		20 24
2-E-2	8 24		48		1 30	2 30		13 12
2-D-3	8 48			7 18		7 48		23 54
2-C-4	14 48	30	15	17 00		2 18		34 51
2-B-5	10 00	15		15 30				25 45
2-G-6	<u>10 48</u>			<u>15 48</u>		<u>3 30</u>		<u>30 06</u>
	62 24	4 15	1 03	60 24	3 30	16 36		148 12
3-H-1	5 55	20	2 05			30		9 50
3-I-2	6 50	25	30	8 30	1 00	2 05		19 35
3-J-3	<u>5 20</u>	<u>15</u>	<u>10</u>	<u>8 00</u>		<u>5 20</u>		<u>19 05</u>
	18 05	1 00	2 45	16 30	1 00	7 55		48 30

(*) Totals also include minor time for Eating and Household Business.

SPACE REQUIREMENTS

The following section is concerned with the recording of the facilities (space, equipment and arrangement) provided in the dwelling, and the recording and analyzing of the families' reactions to the facilities provided. Where possible, deductions are made concerning the various spaces within the dwelling. It must be remembered, however, that:

The validity of such deductions drawn is definitely limited by:

The size of sample--three families are statistically unacceptable for conclusions of any kind.

The limitations of the methods of measuring reactions.

The limited number of plans tested.

Any deductions drawn can apply only to:

A family of four of the same general characteristics of the test families.

Houses located in a similar environment.

The value of this research lies chiefly in its functioning as a pilot study for work of this type.

The material is discussed by rooms, or by functional parts of rooms, and is arranged in the following manner:

Description of Facilities

Recording of Family Reactions to Facilities

Analysis and Interpretation of Data

Auxiliary Studies

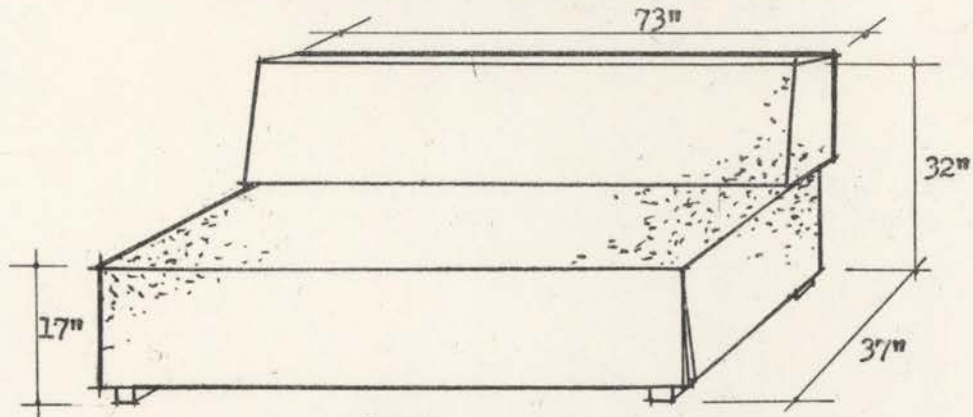
Deductions

Recommendations

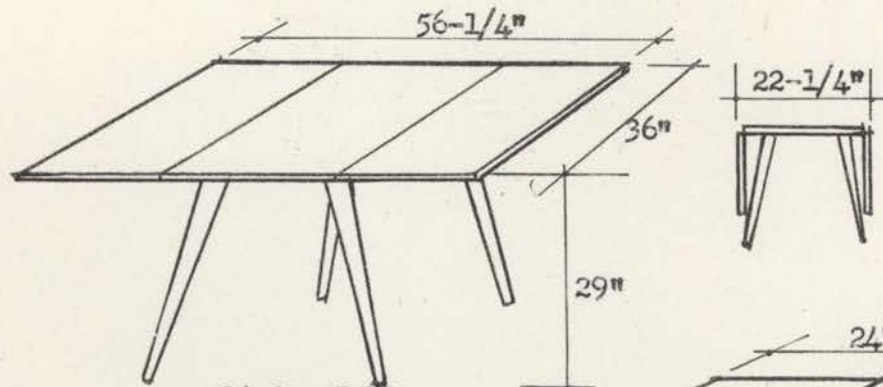
FURNITURE AND EQUIPMENT

On the following pages are illustrations of the furniture and equipment used in the test dwelling. These are followed by plans showing the furniture arrangements used in the various plans.

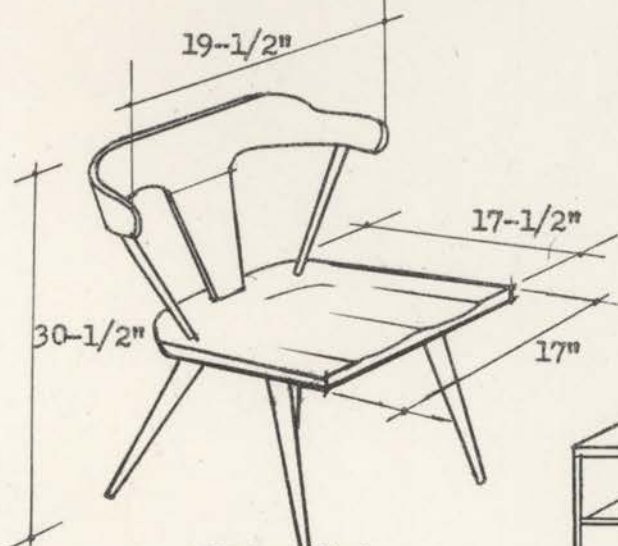
TEST DWELLING FURNITURE AND EQUIPMENT



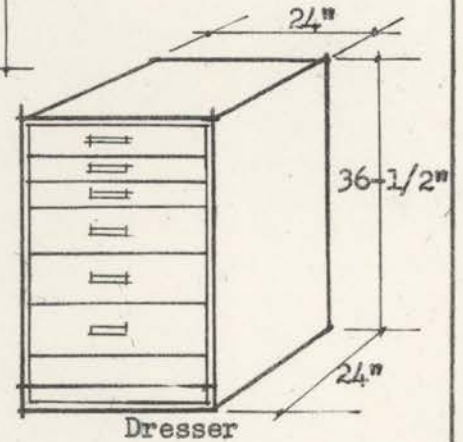
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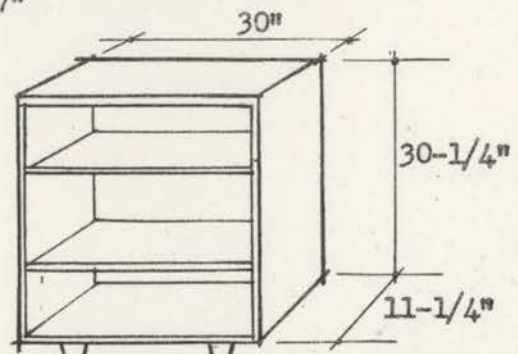
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Dining Chair

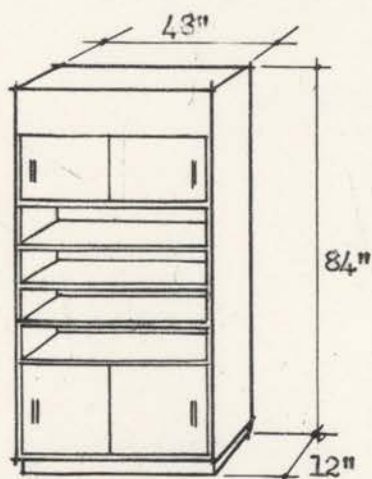


Dresser

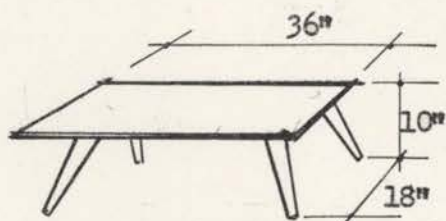


Toy Shelves

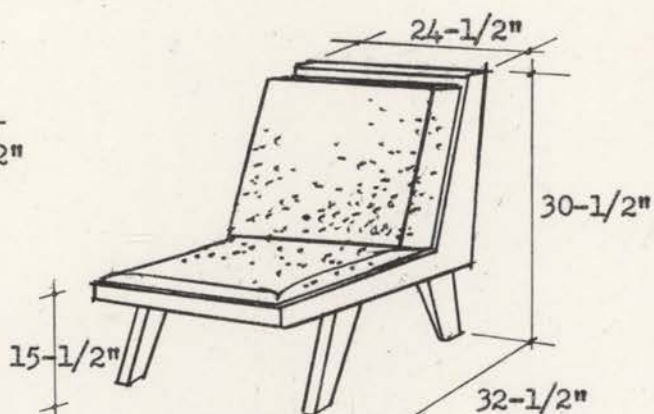
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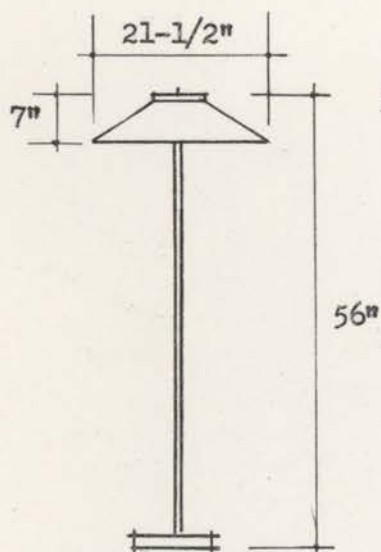
Bookcase



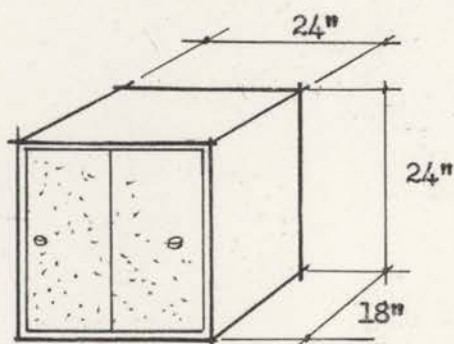
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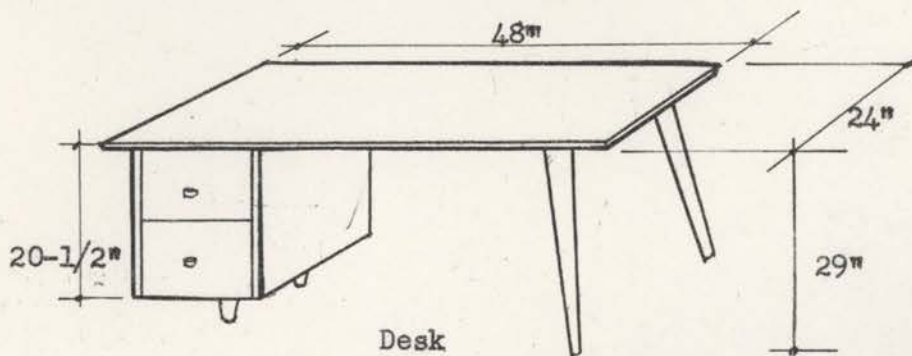
Easy Chair



Floor Lamp

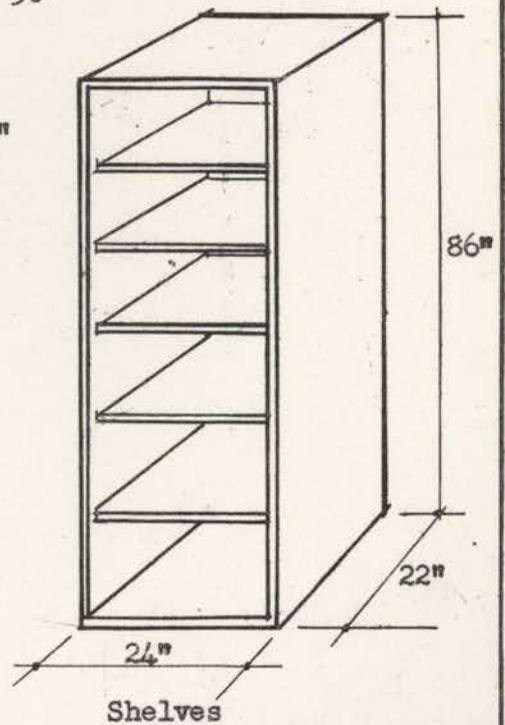
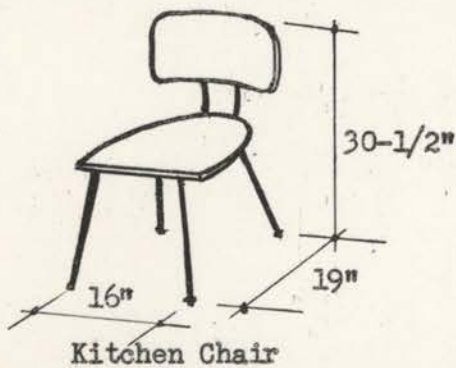
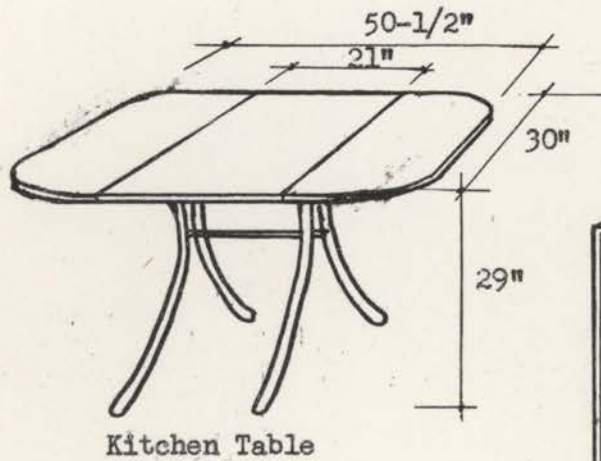
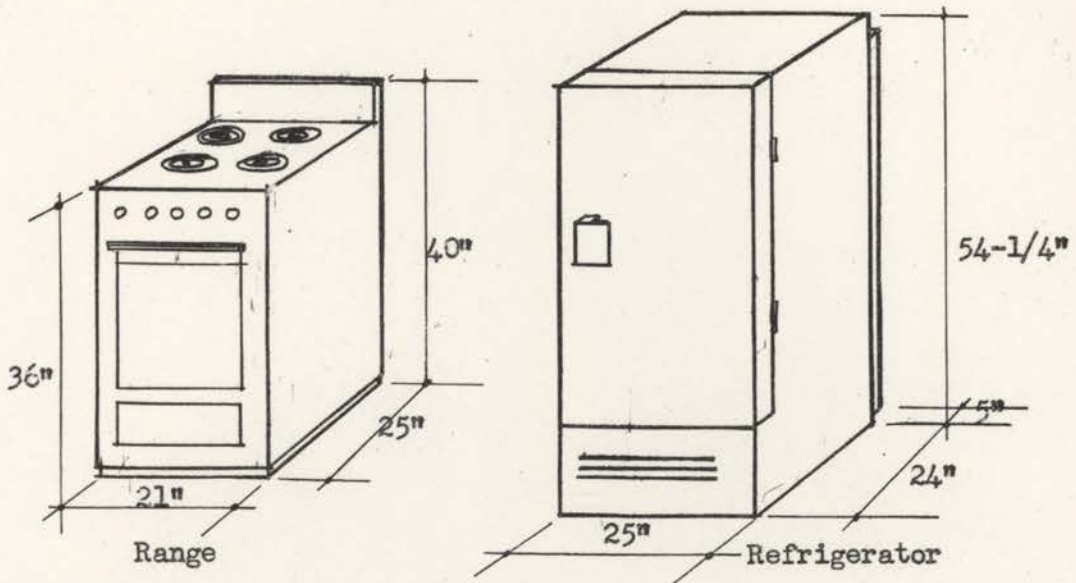


Cabinet

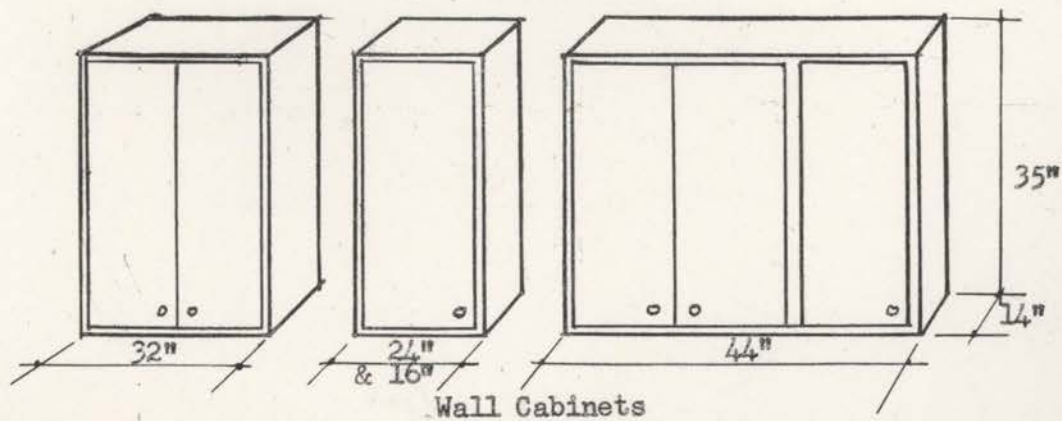
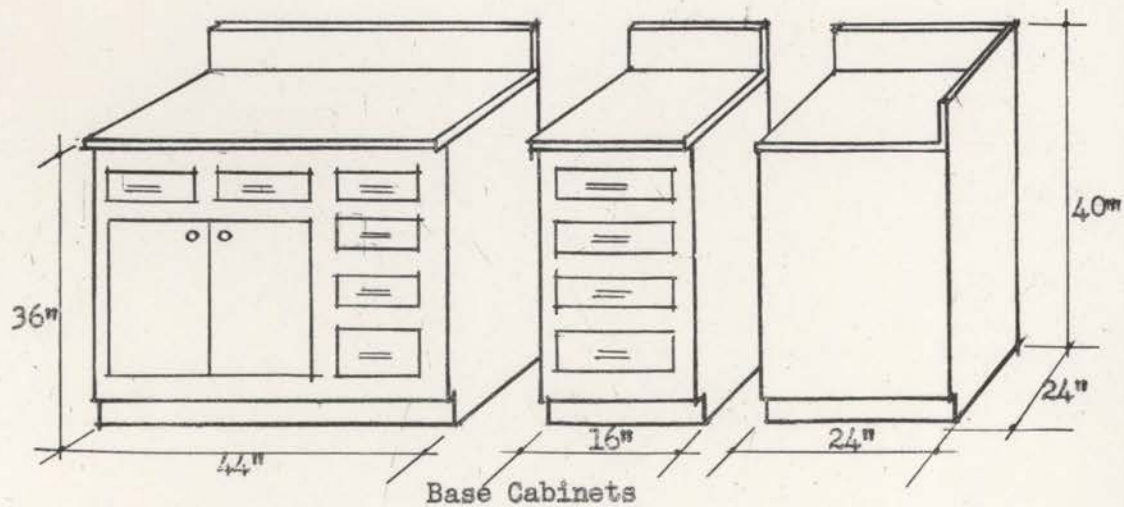
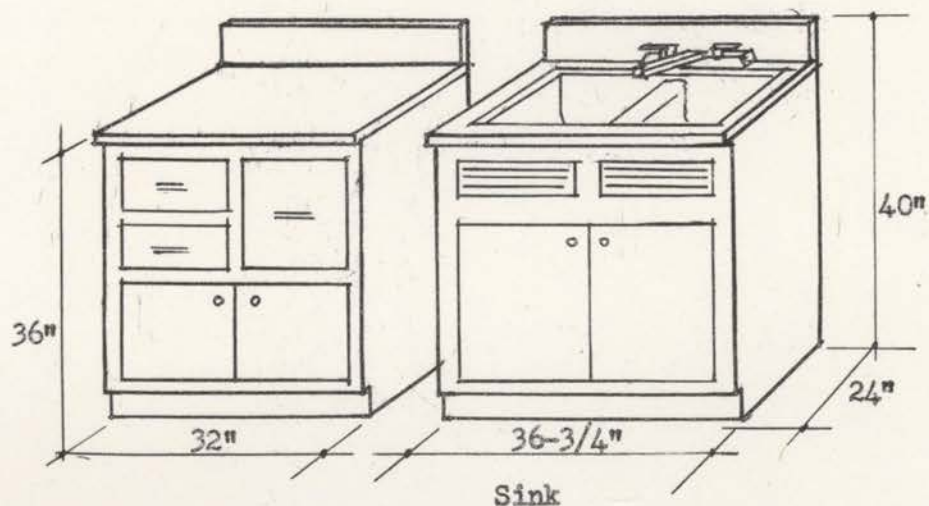


Desk

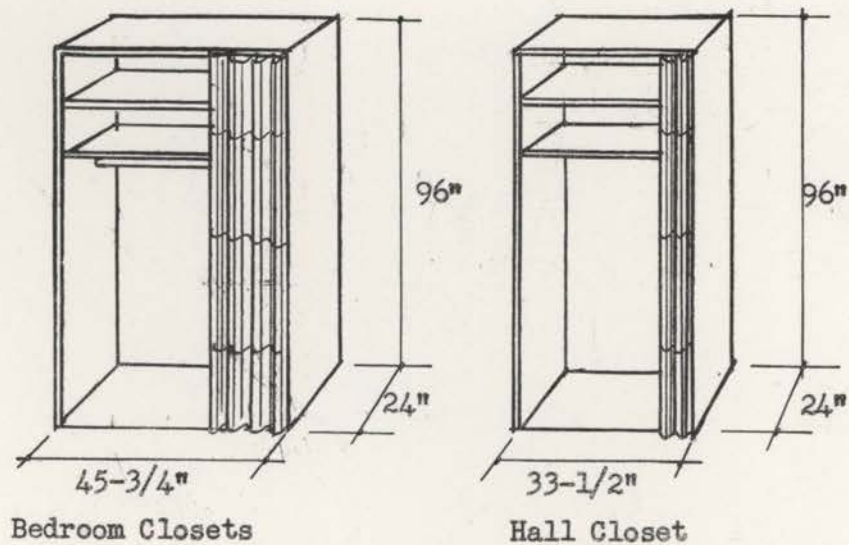
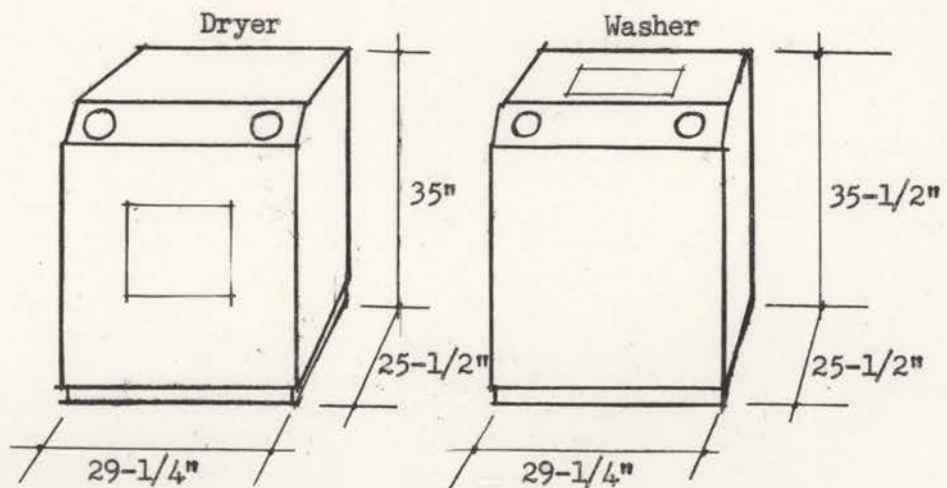
TEST DWELLING FURNITURE AND EQUIPMENT



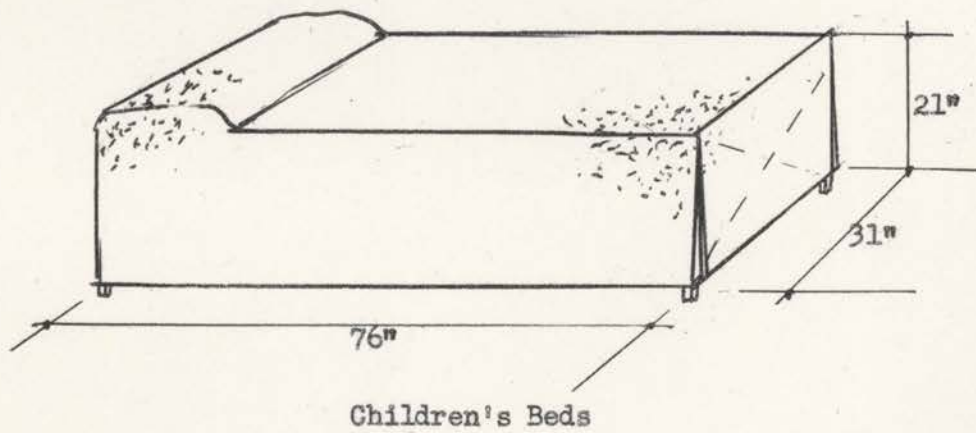
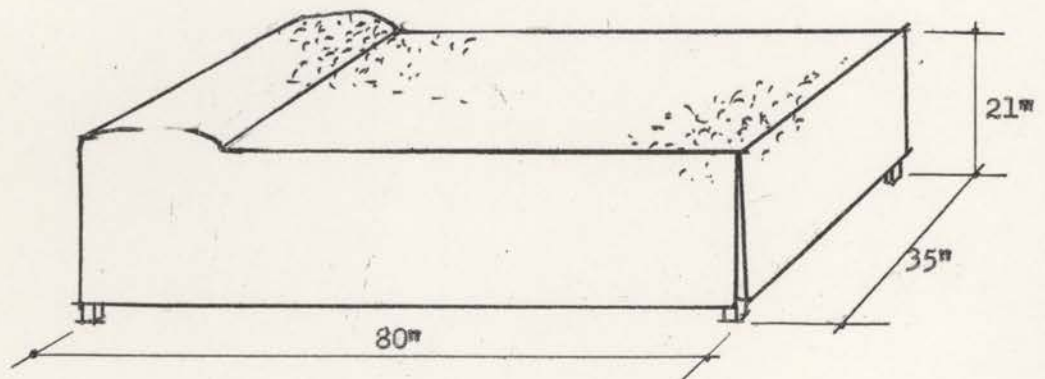
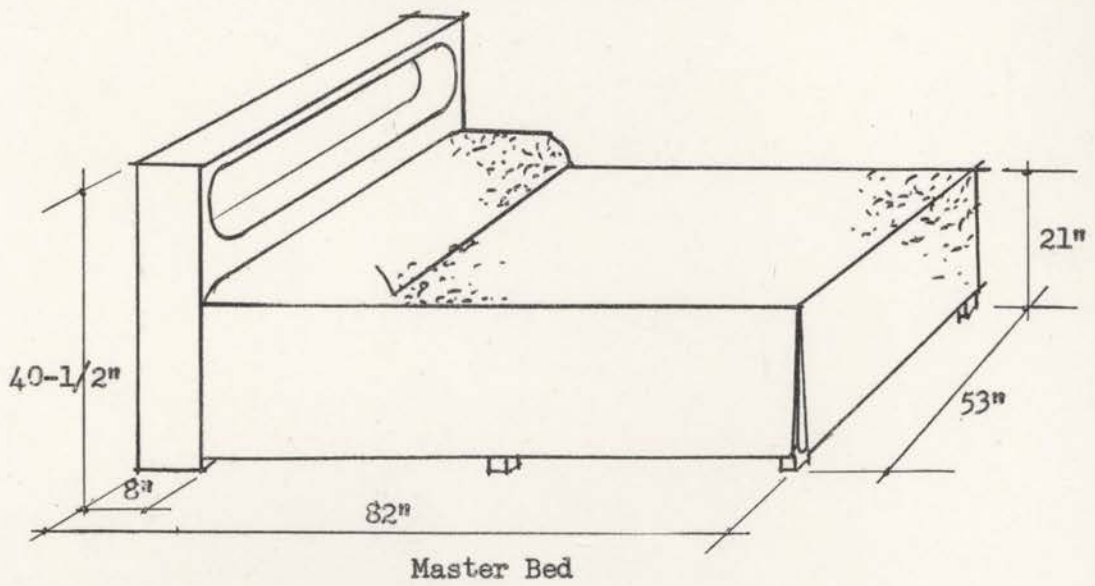
TEST DWELLING FURNITURE AND EQUIPMENT

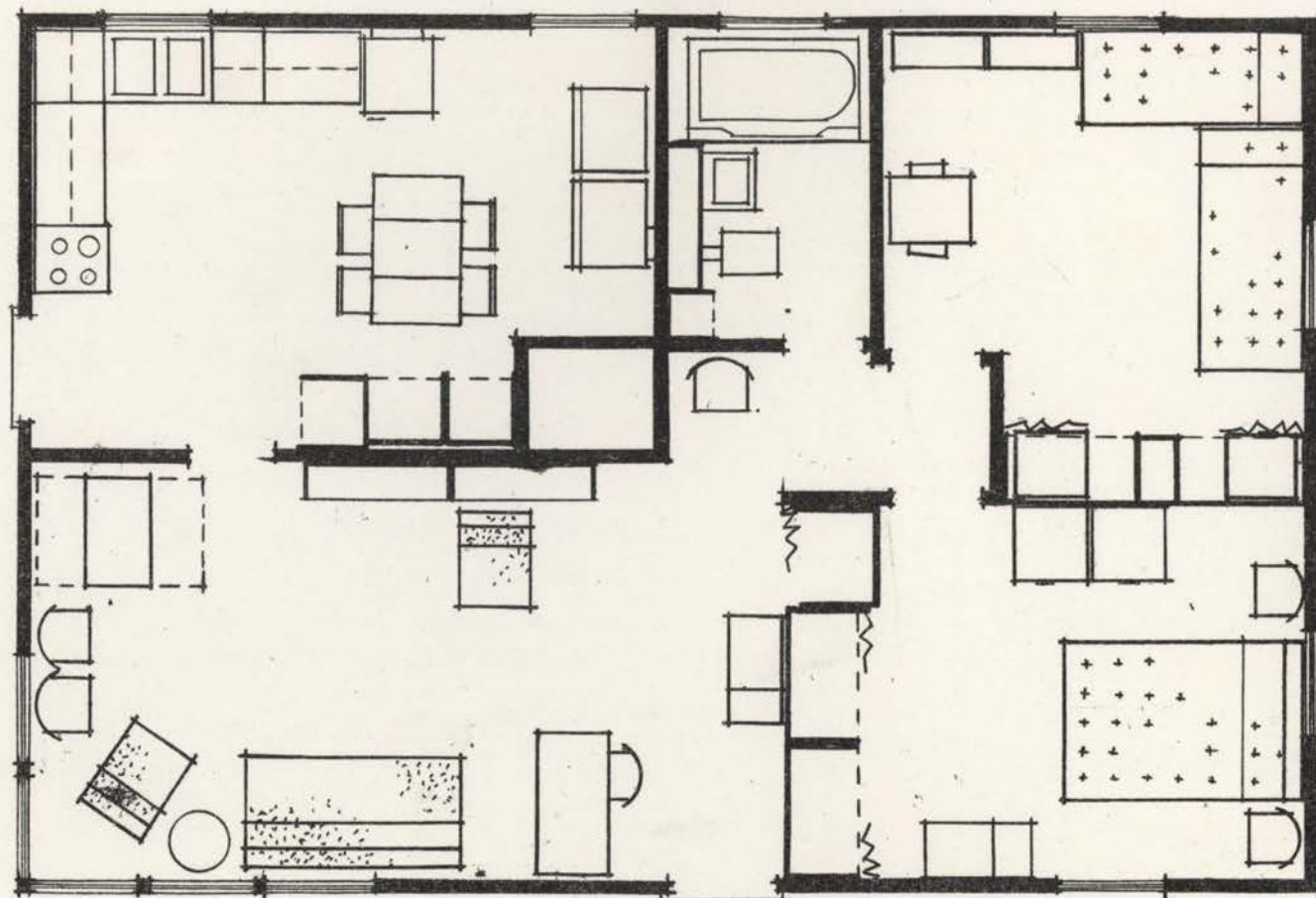


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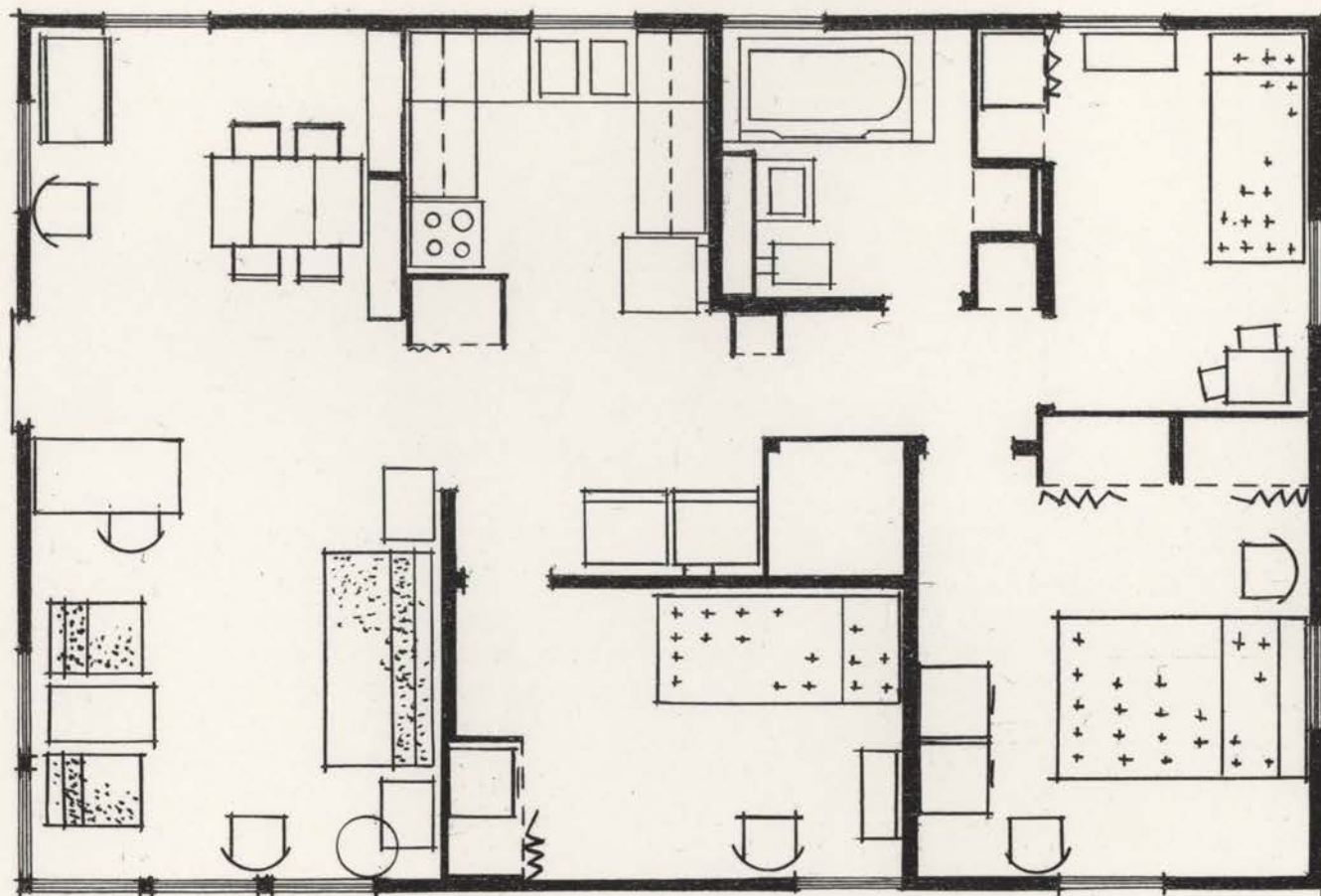


TEST DWELLING FURNITURE AND EQUIPMENT

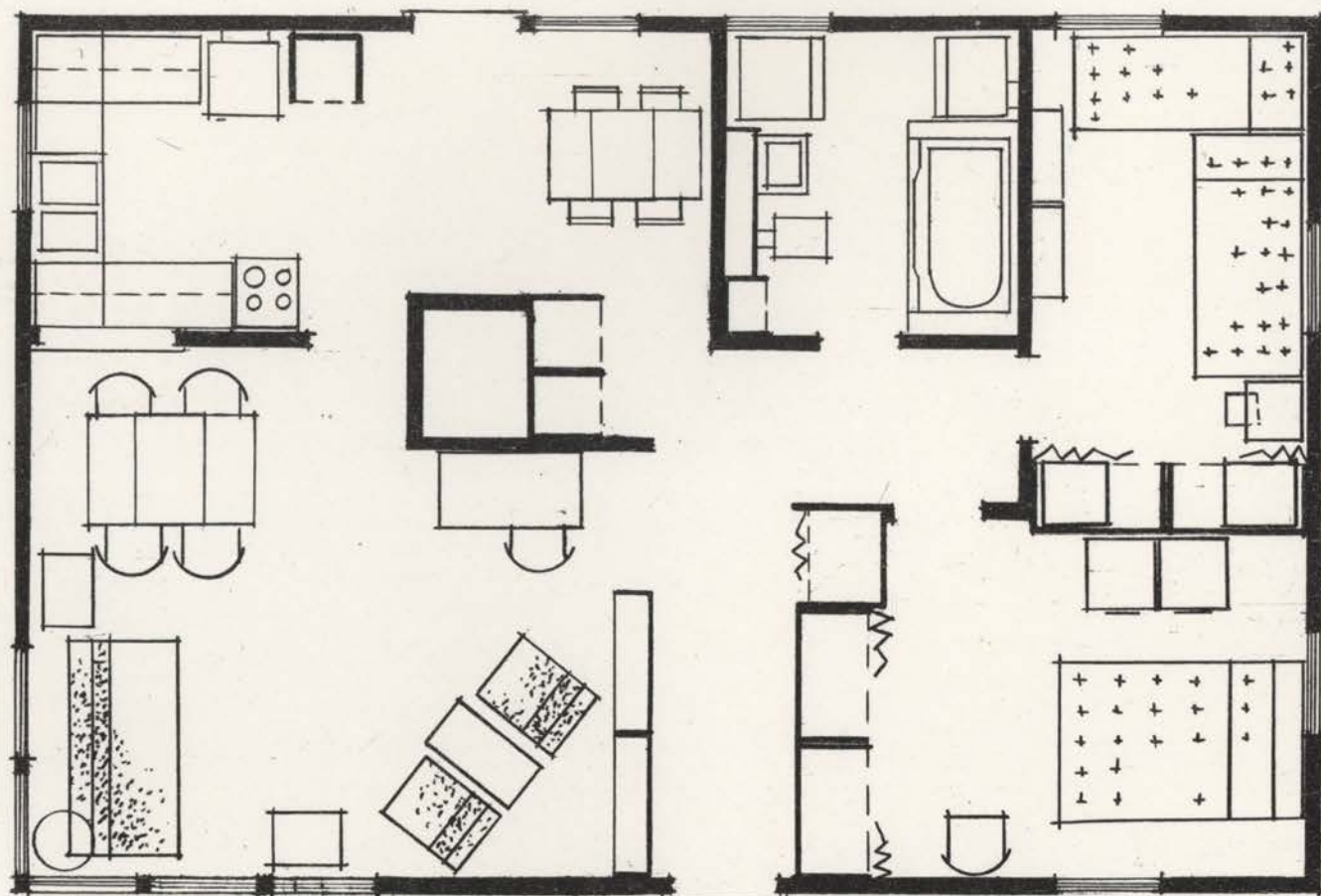




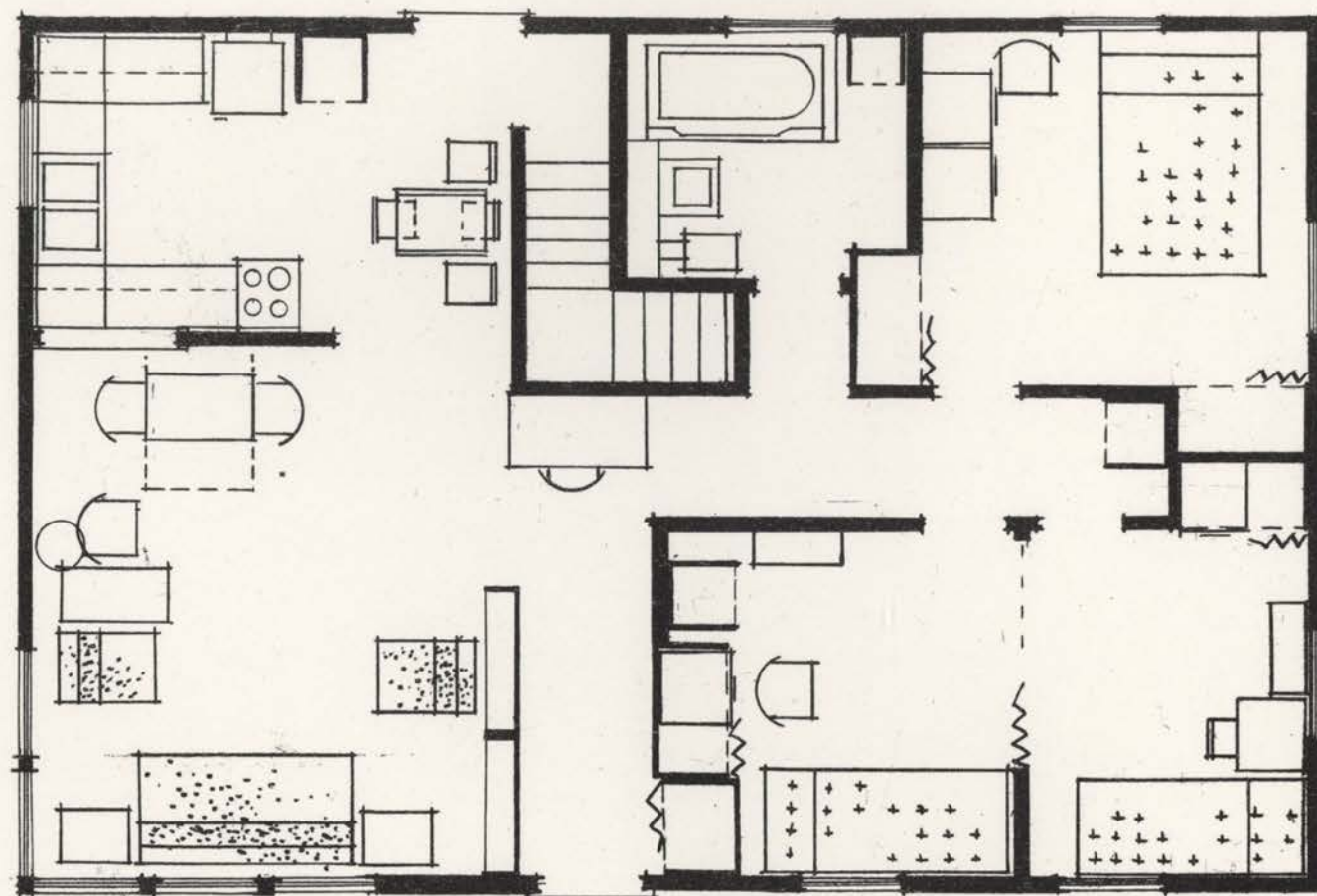
FURNITURE ARRANGEMENTS
1-A-1



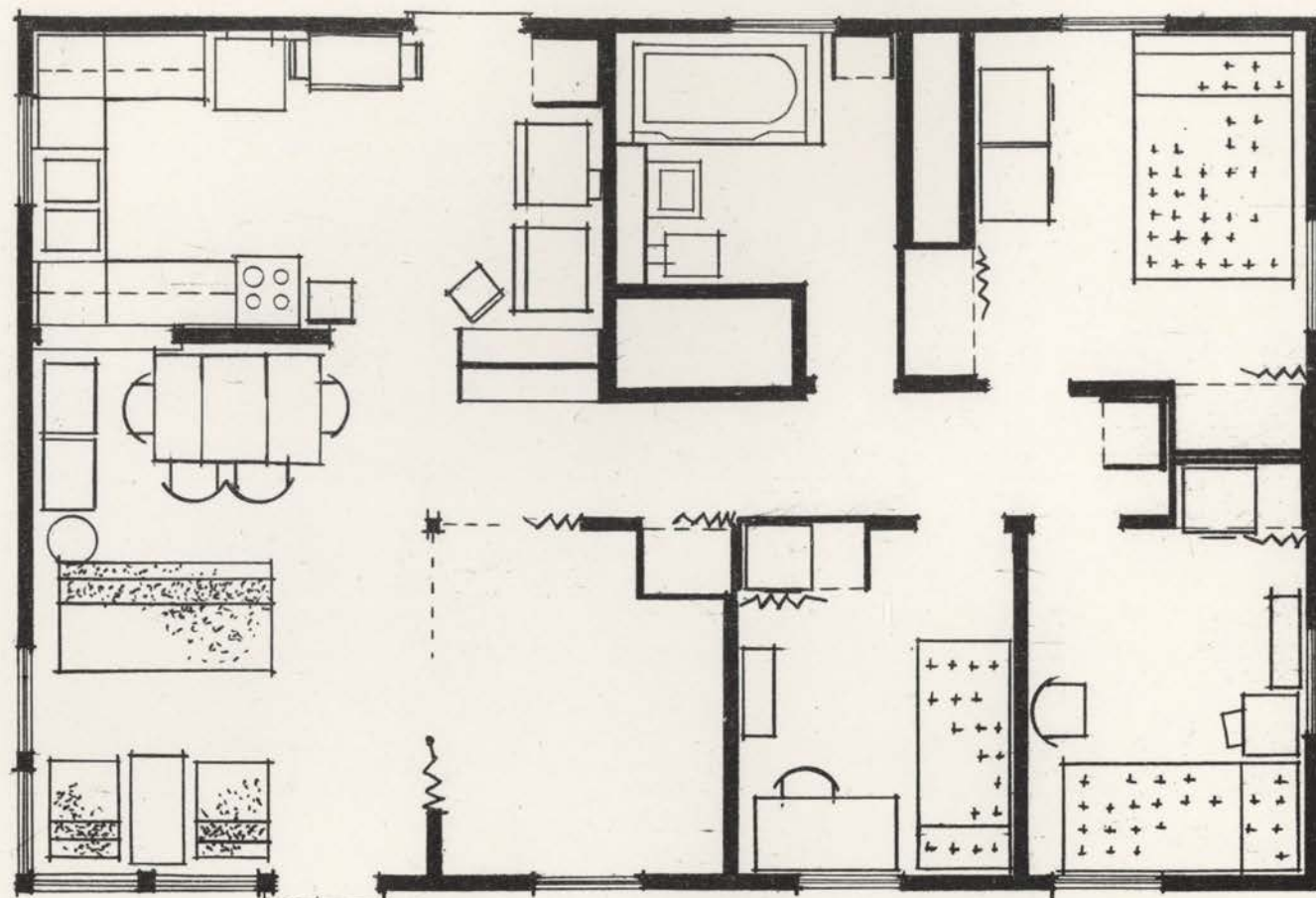
FURNITURE ARRANGEMENTS
1-B-2



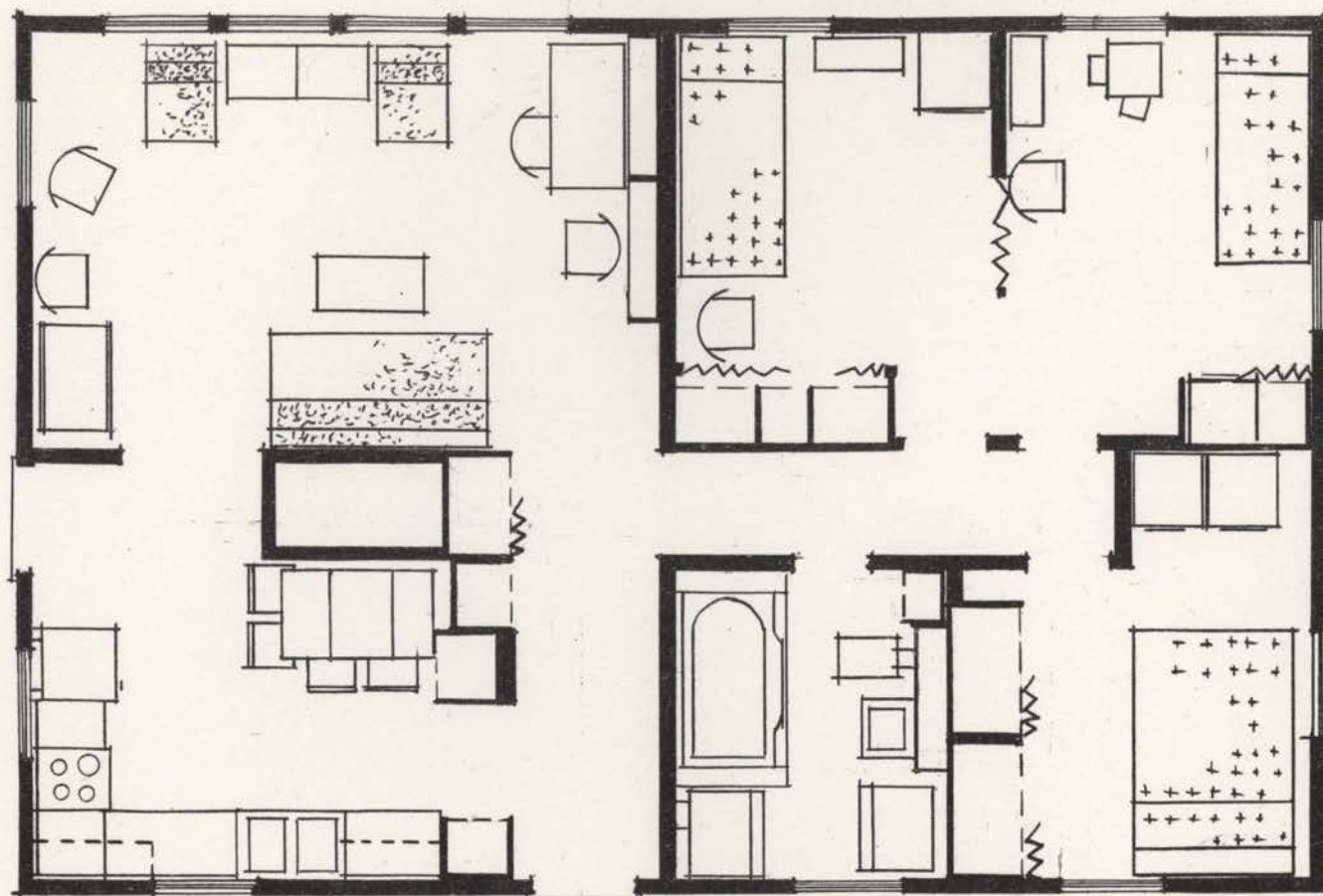
FURNITURE ARRANGEMENTS
1-C-3



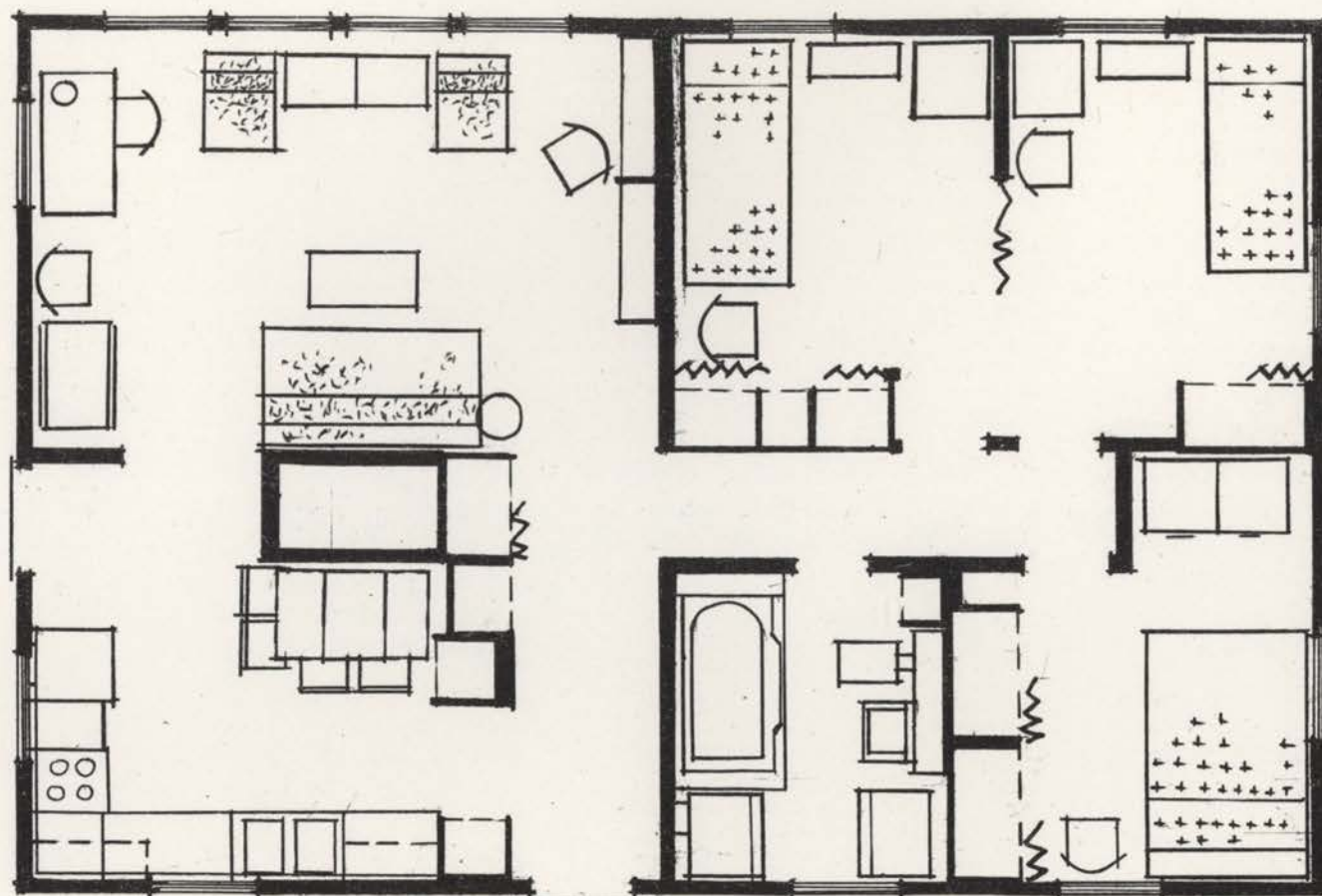
FURNITURE ARRANGEMENTS
1-D-4



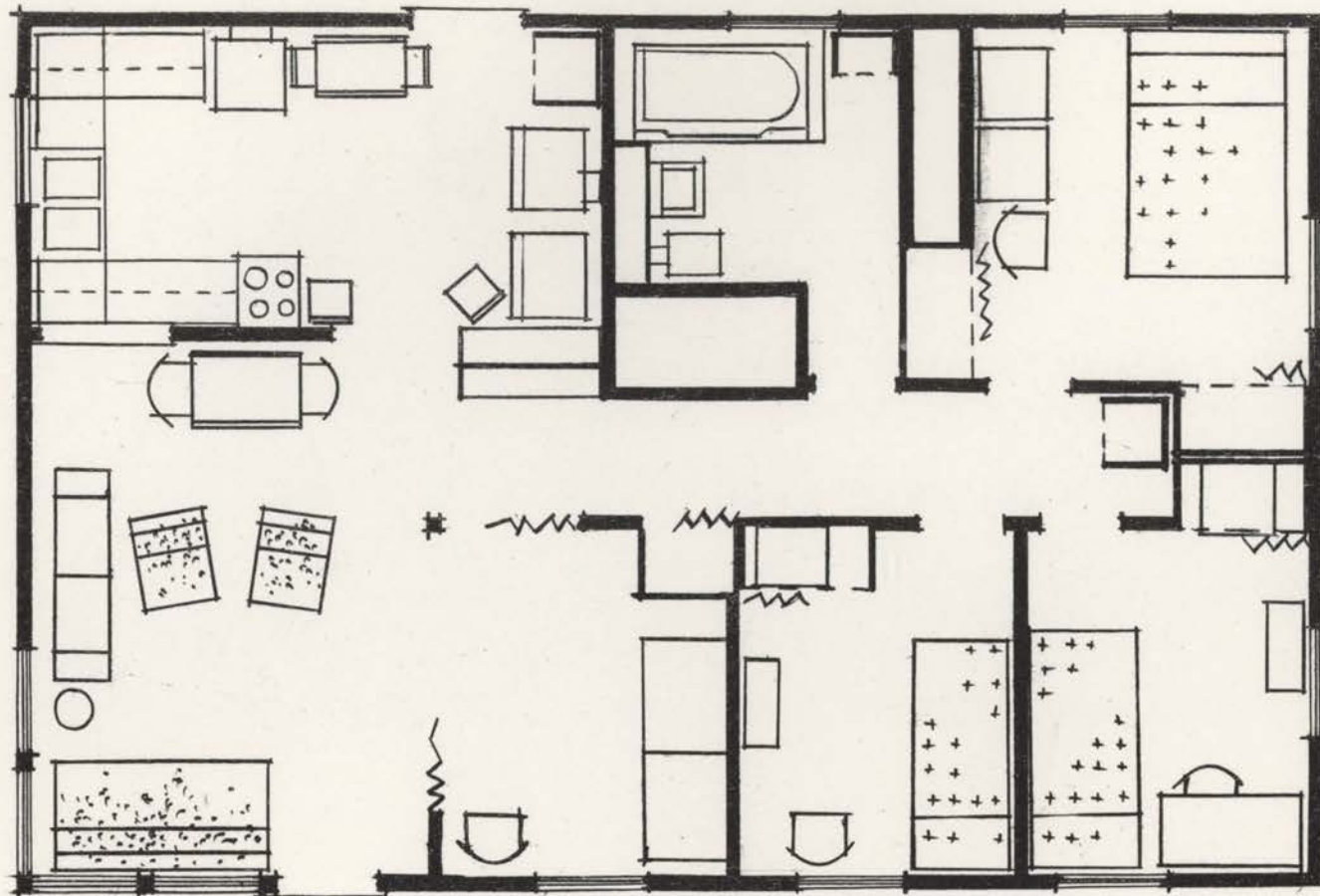
FURNITURE ARRANGEMENTS
1-E-5



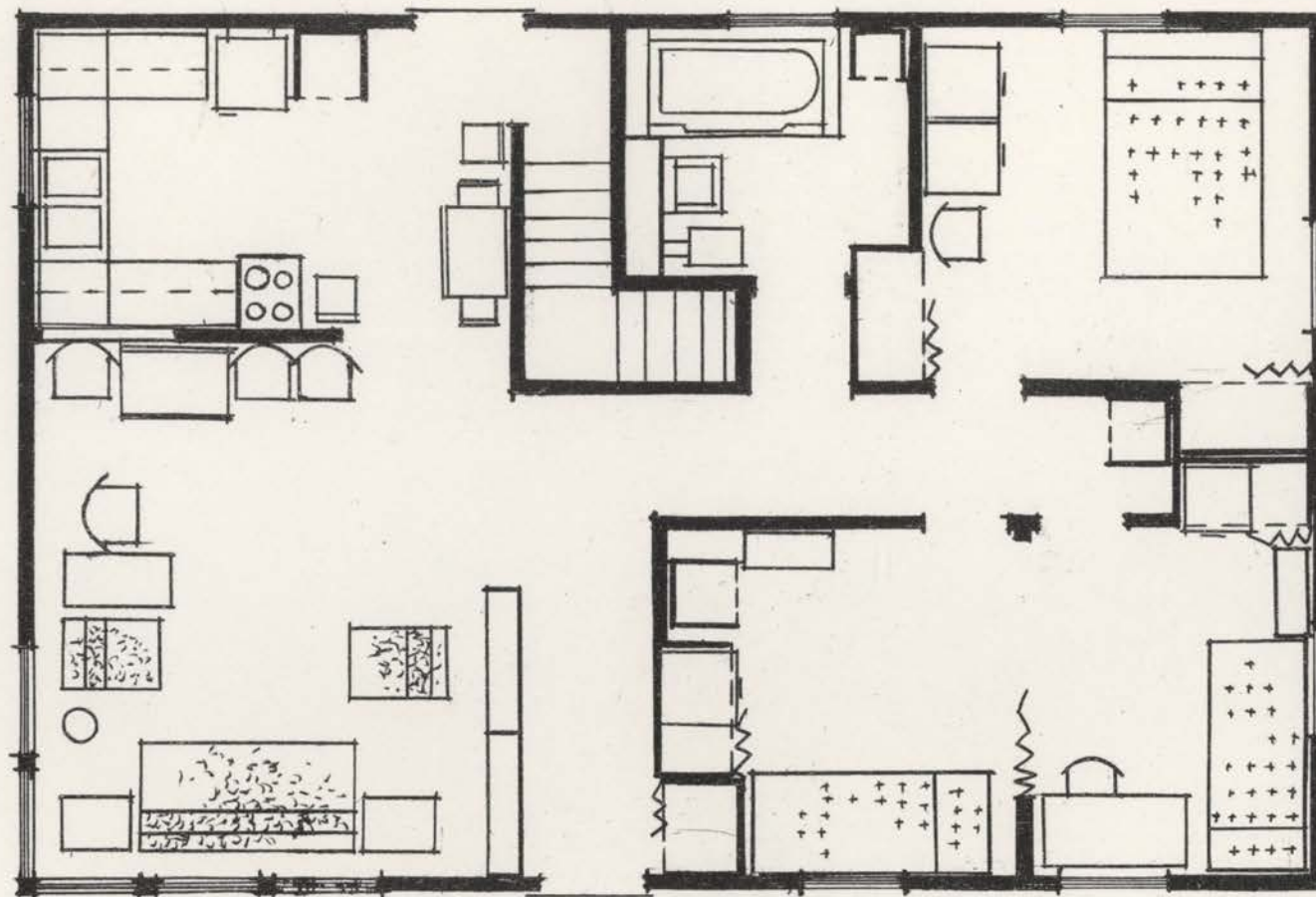
FURNITURE ARRANGEMENTS
1-F-6



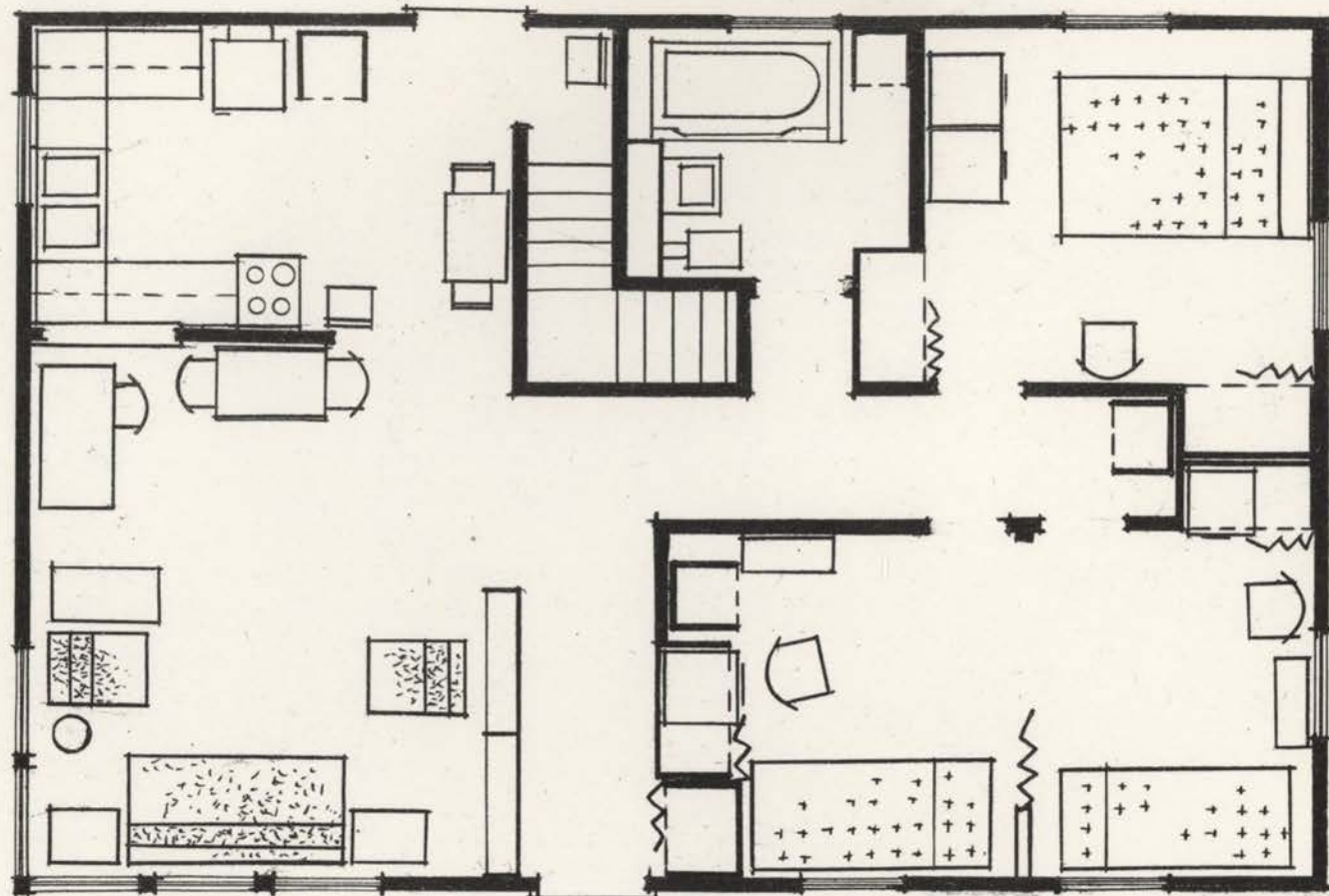
FURNITURE ARRANGEMENTS
2-F-1



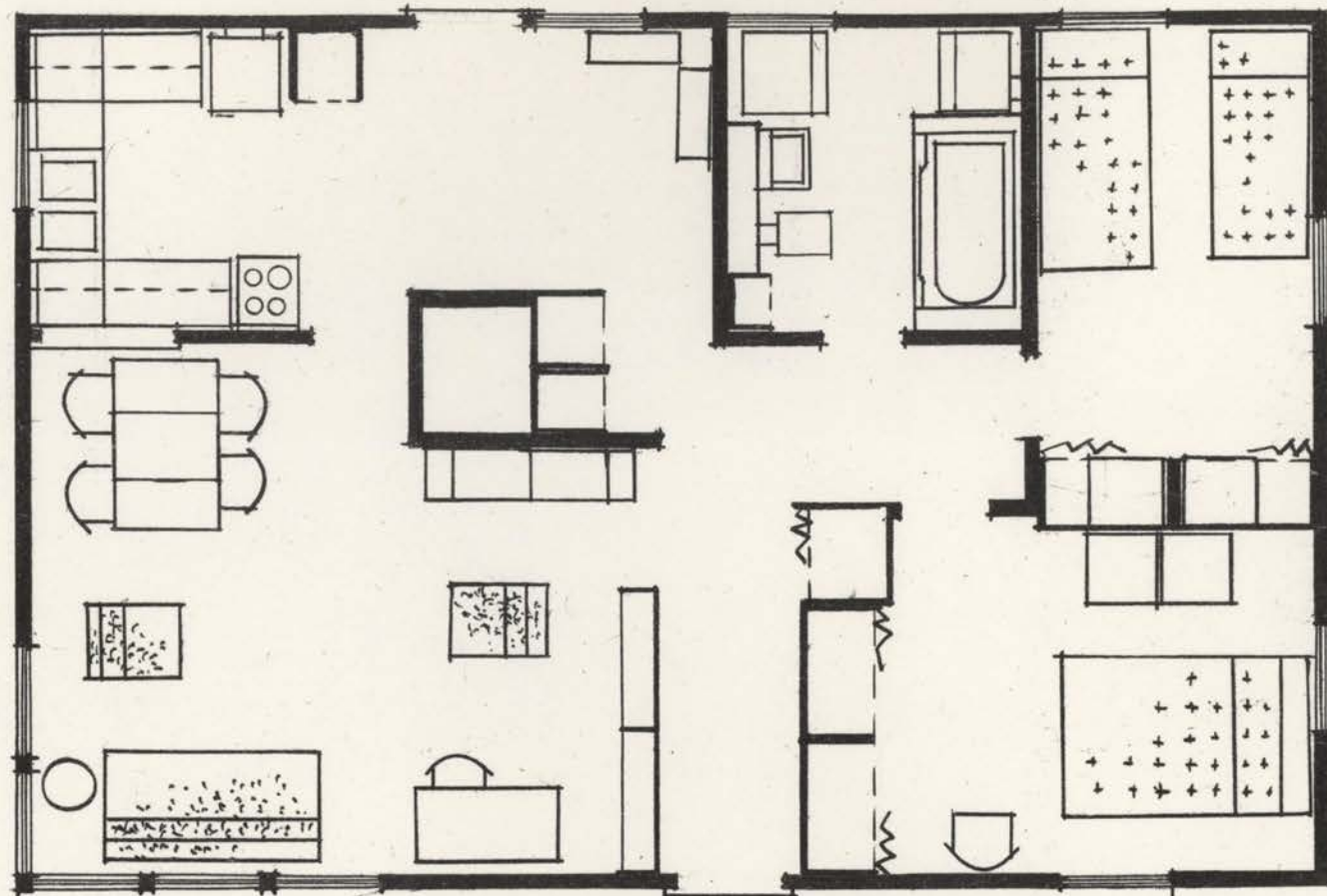
FURNITURE ARRANGEMENTS
2-E-2



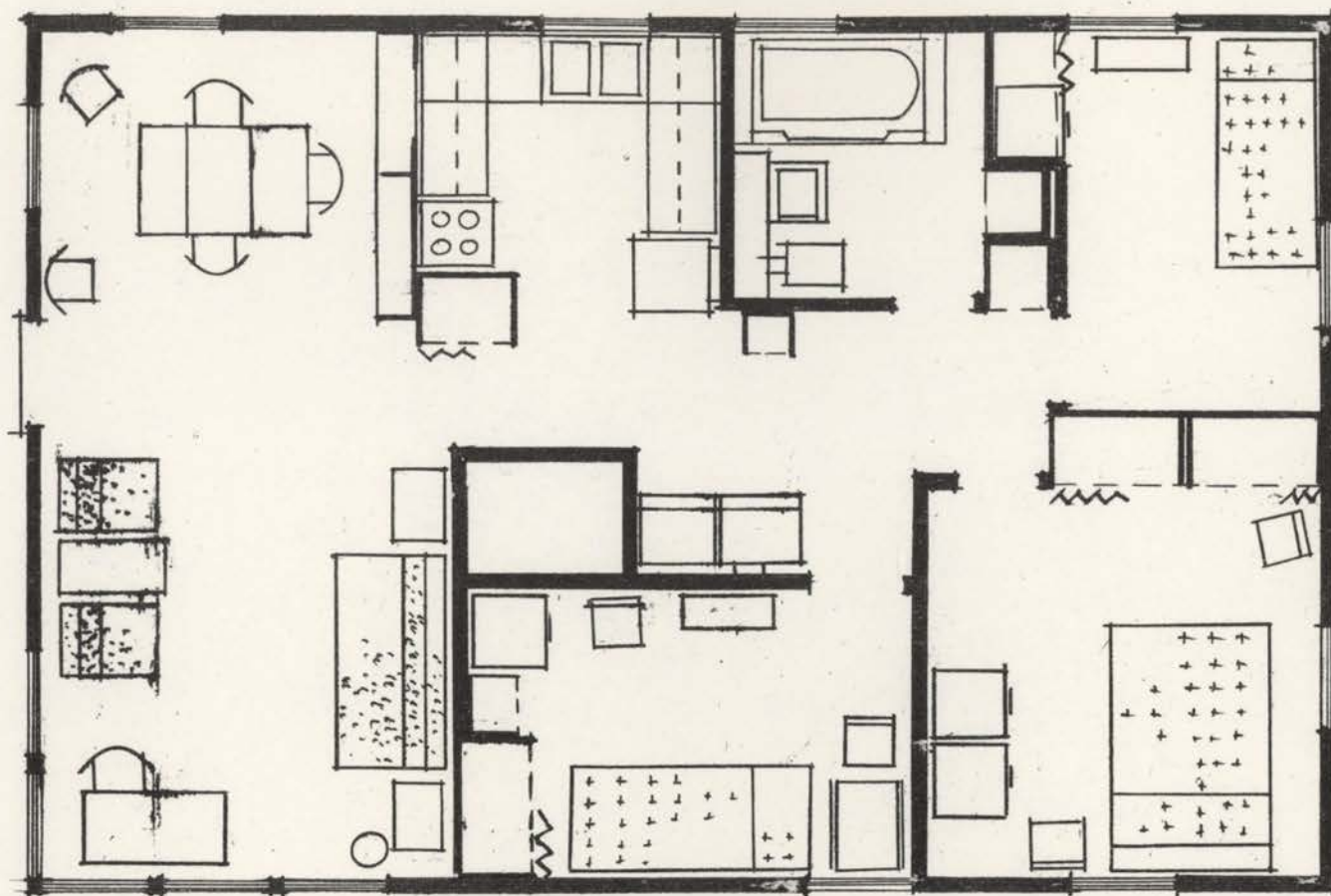
FURNITURE ARRANGEMENTS
2-D-3
(first of month)



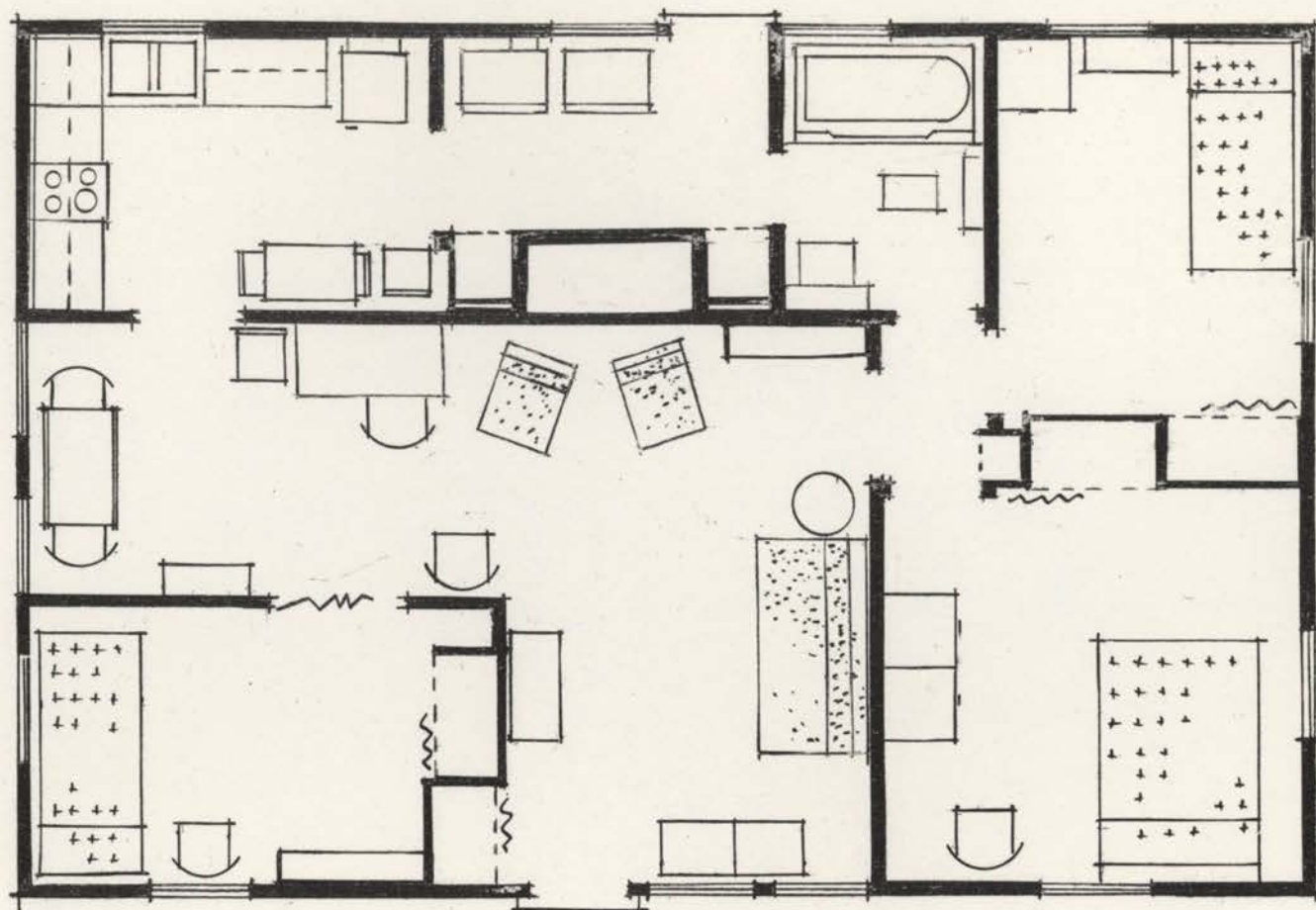
FURNITURE ARRANGEMENTS
2-D-3
(end of month)



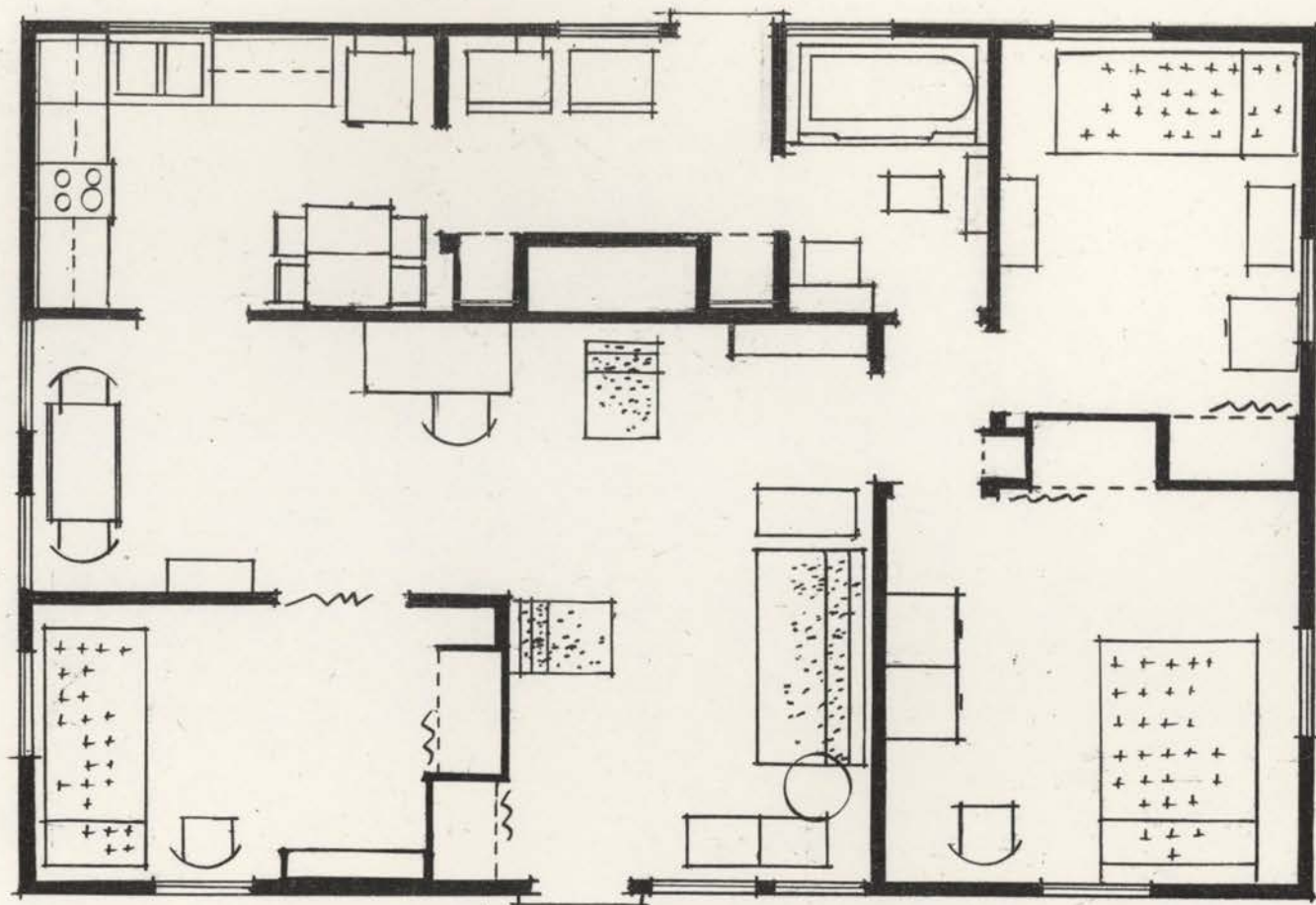
FURNITURE ARRANGEMENTS
2-C-4



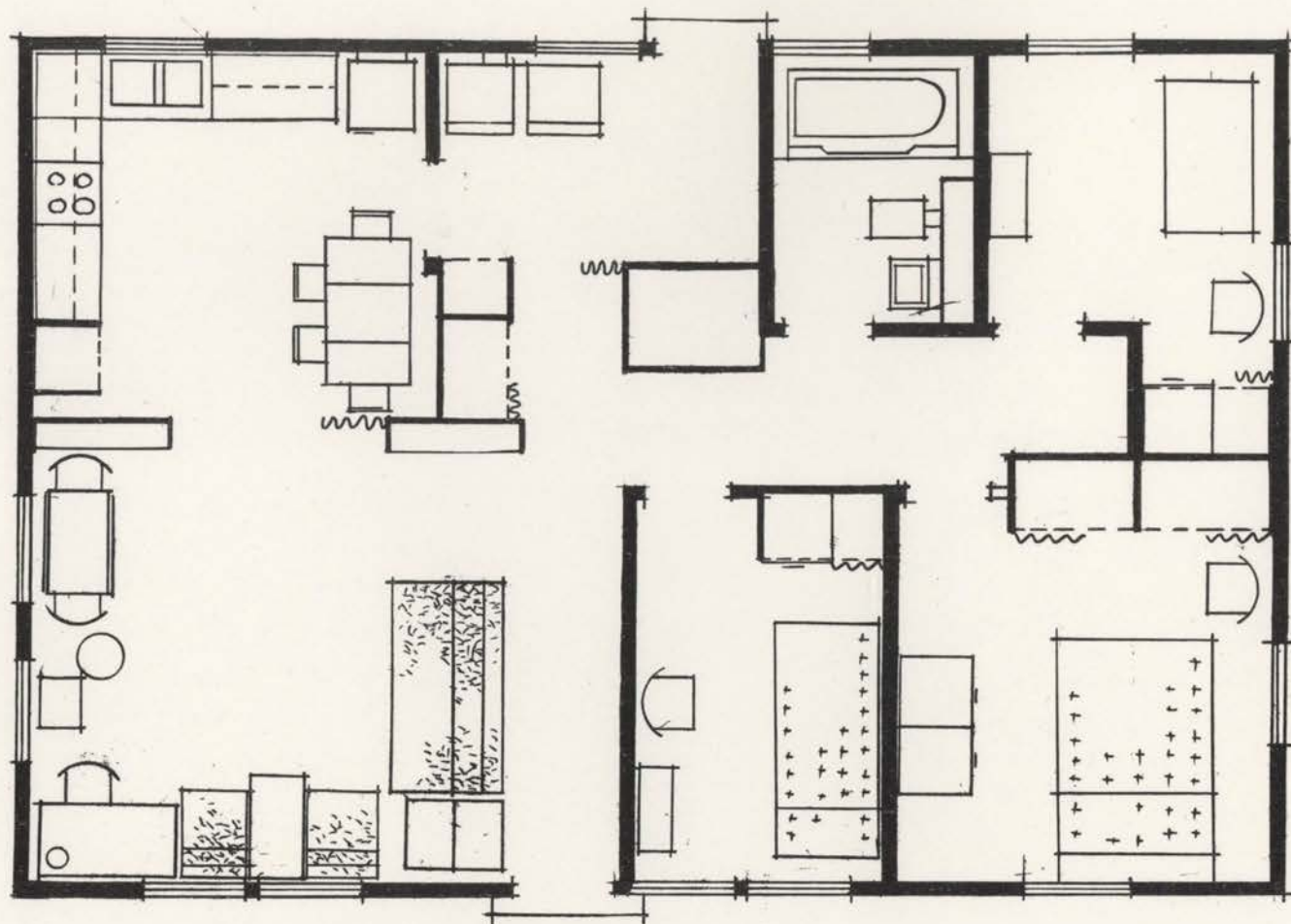
FURNITURE ARRANGEMENTS
2-B-5



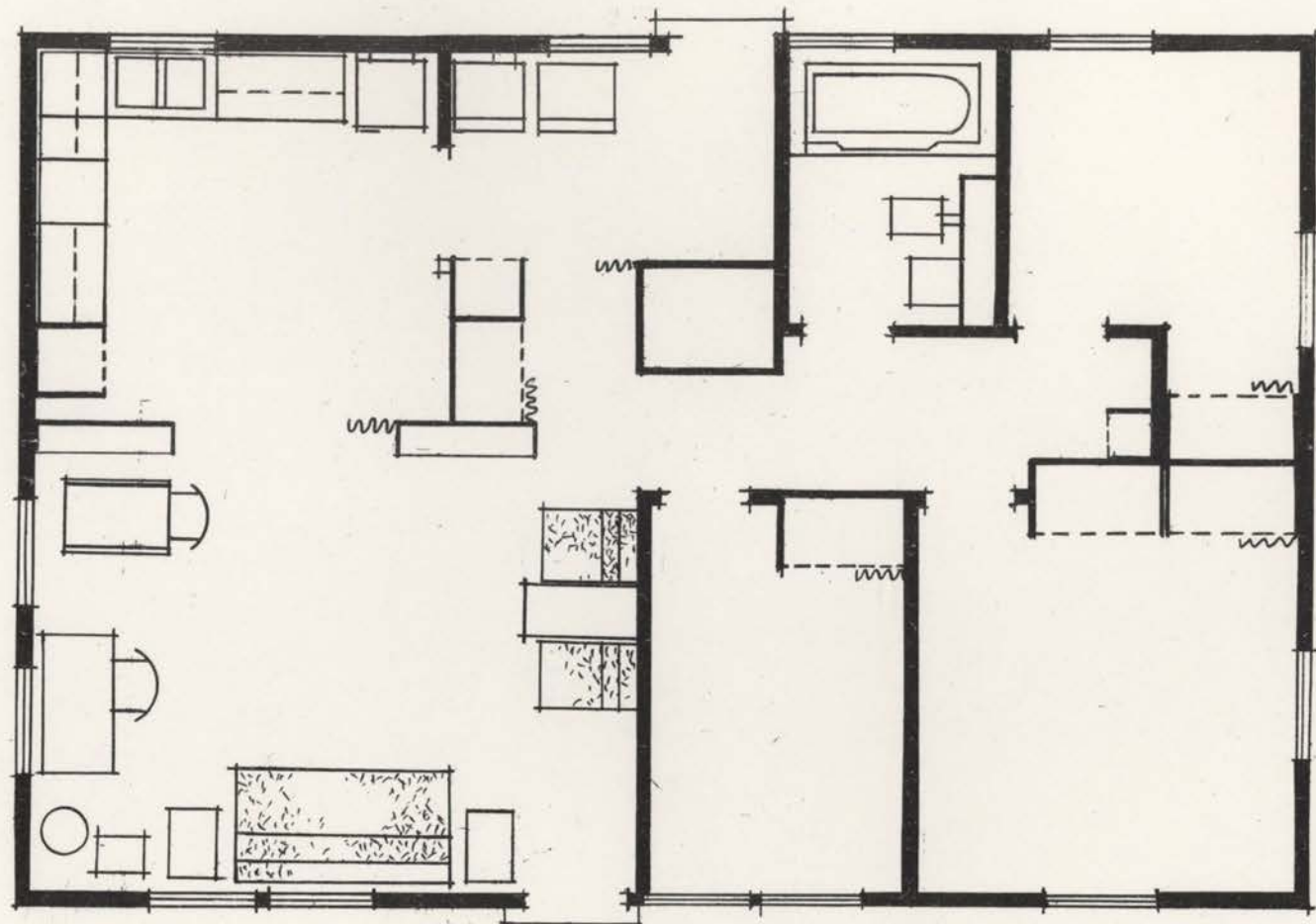
FURNITURE ARRANGEMENTS
2-G-6
(first of month)



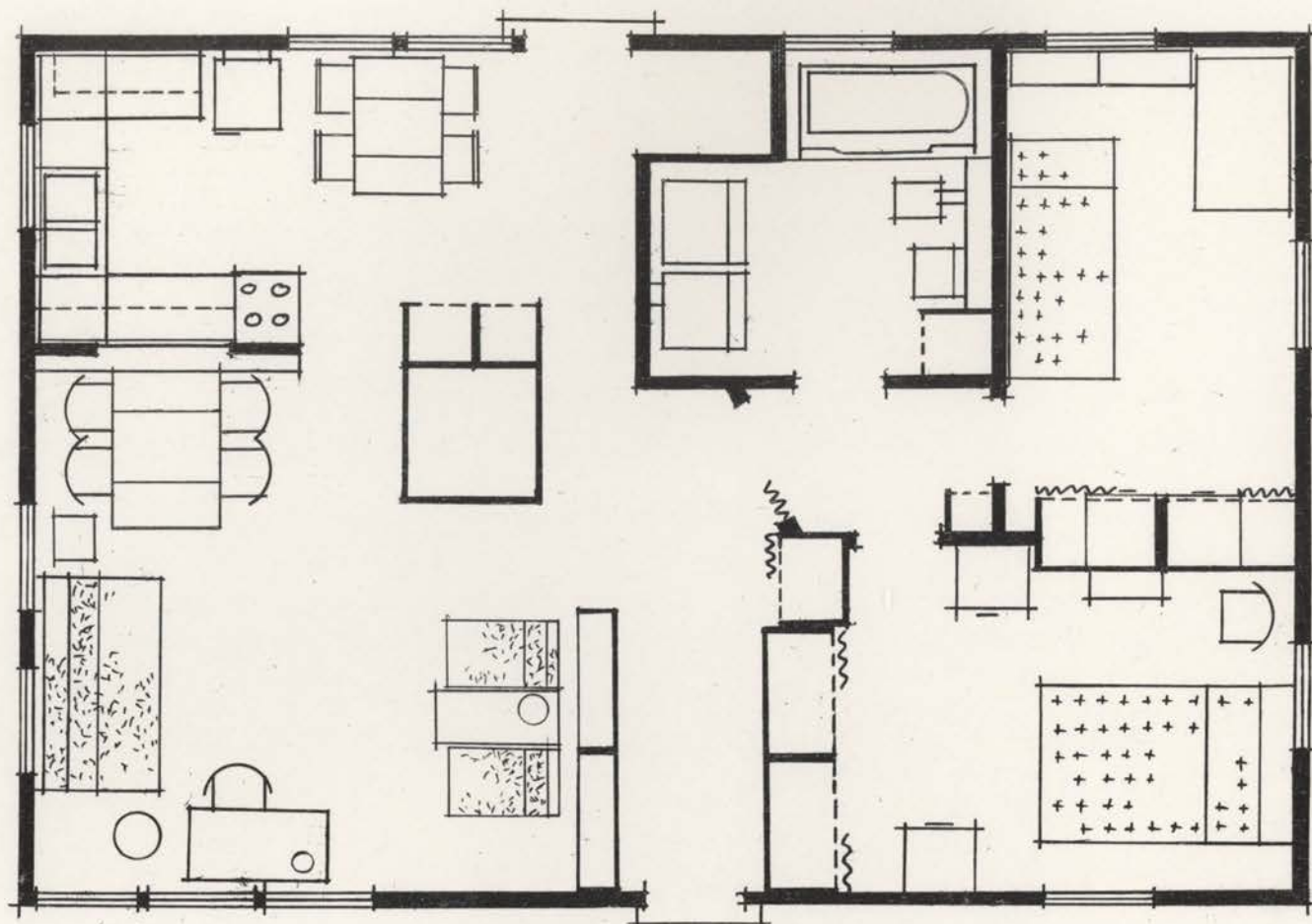
FURNITURE ARRANGEMENTS
2-G-6
(middle of month)



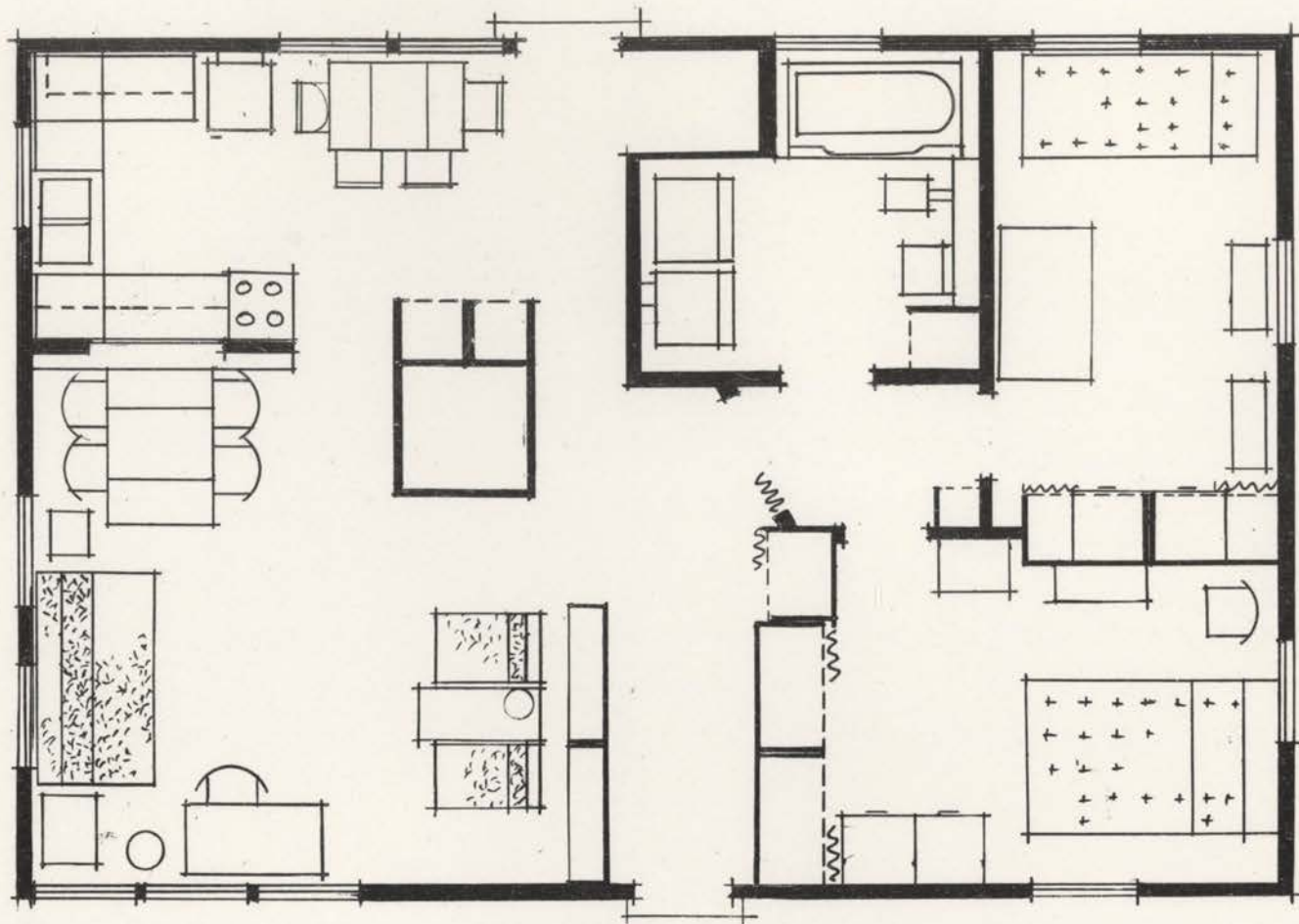
FURNITURE ARRANGEMENTS
3-H-1
(first of month)



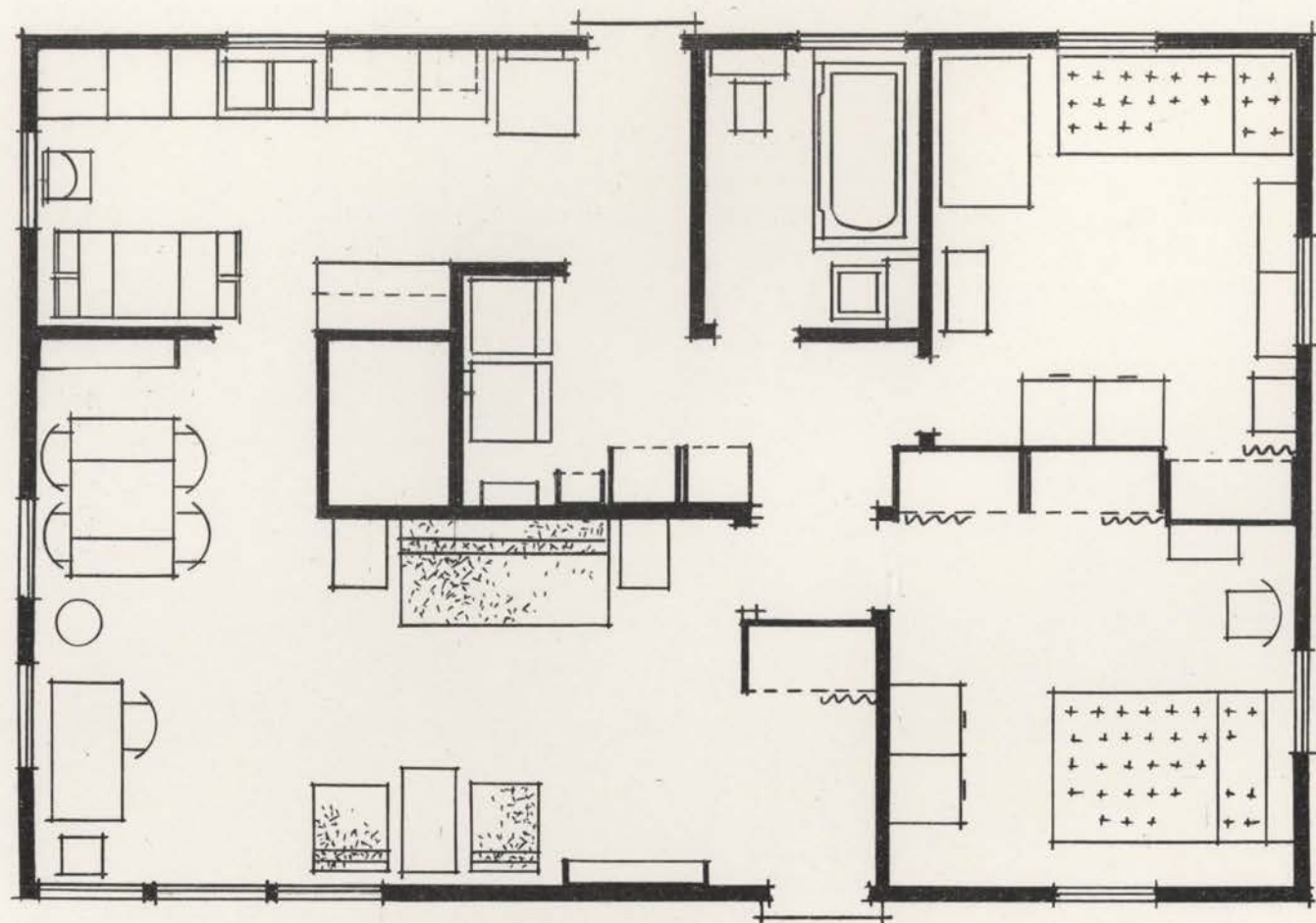
FURNITURE ARRANGEMENTS
3-H-1
(end of month)



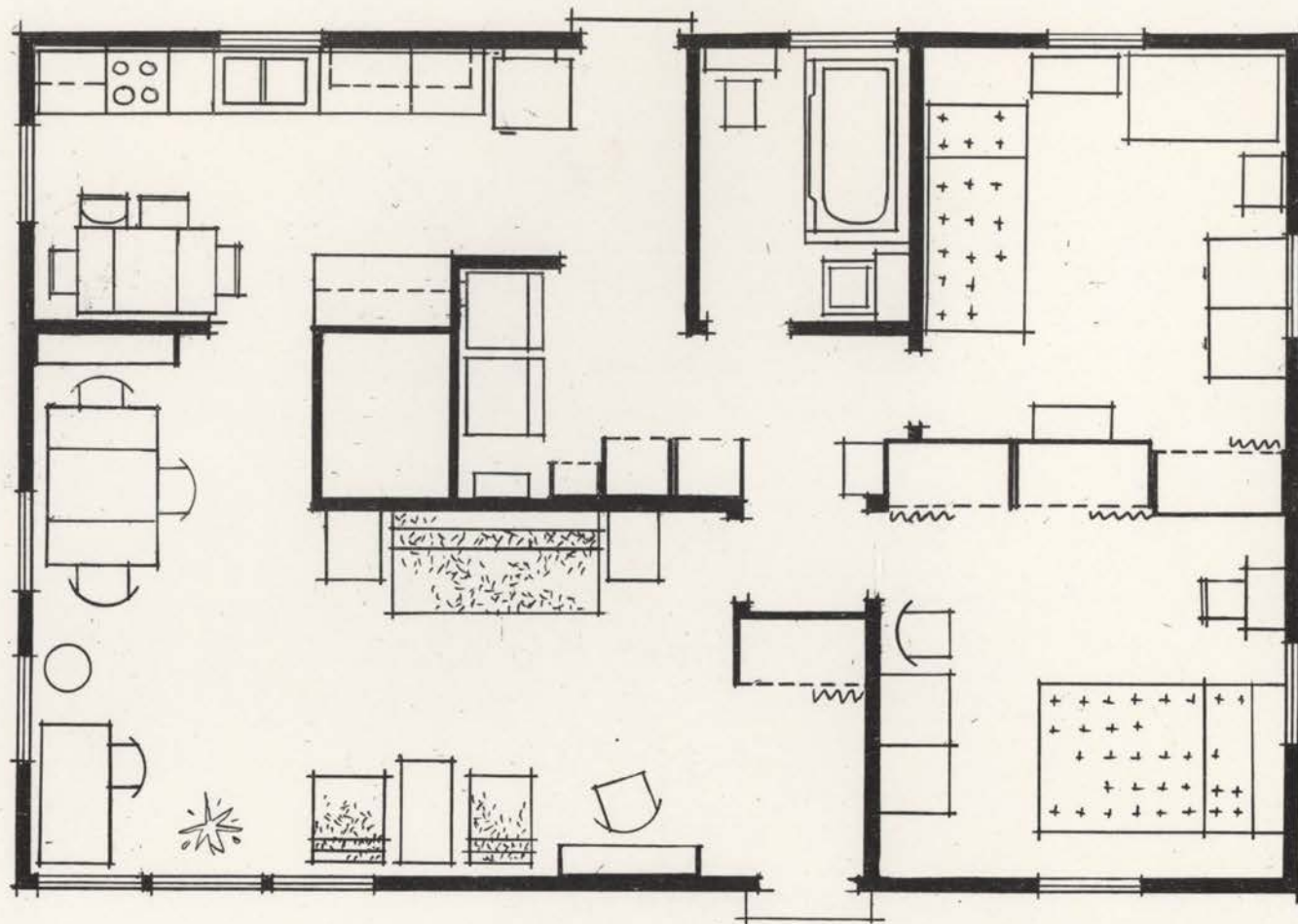
FURNITURE ARRANGEMENTS
3-I-2
(first of month)



FURNITURE ARRANGEMENTS
3-I-2
(end of month)



FURNITURE ARRANGEMENTS
3-J-3
(first of month)



FURNITURE ARRANGEMENTS
3-J-3
(end of month)

LIVING-DINING ROOM
Description of Facilities

General

In planning the test plans, it was assumed that the living-dining rooms would be used for the following:

Dining (primarily for guest entertainment--in some plans, for routine eating)

General living and recreational activities (including reading, card-playing, children's play, etc.)

In some instances, the living room was planned to serve as:

The entry to the house

Passage space through the house

The actual use of the living-dining area of the house is reported in section on "ROOM USE", page 51.

Furniture and Equipment*

The following equipment was supplied for use in the living-dining area.

Couch (or sofa)

73" long, 37" ftb, ** 32" high, 17" seat height (could be opened for sleeping).

Upholstered chairs

2 chairs, 24-1/2" wide, 32-1/2" ftb, 30-1/2" high, 15-1/2" seat height.

Cabinets

2 cabinets, 24" wide, 18" ftb, 24" high, with two shelves covered by sliding doors. (These cabinets were set on the floor or placed on the base tables described below.)

Base tables

2 tables, 18" wide, 36" long, 10" high. (Sometimes stacked to form higher table for lamp.)

Bookcases (or divider cabinets)

2 units, 48" wide, 12" ftb, 84" high, with 2 pairs of sliding doors and 4 open shelves.

(*) See illustrations of furniture following this section.

(**) Ftb indicates measurement "front-to-back".

Desk

48" wide, 24" fth, 29" high, semi-kneehole type with 2 drawers on one side.

Dining table

1 table, drop-leaf type - folded: 22-1/4" x 36" x 29" high
extended: 36" x 56-1/4" x 29" high

Dining chairs

6 chairs, 19-1/2" wide, 17-1/2" fth, 30-1/2" high, formed wooden seat, curved wooden back similar to captains chair. (In some plans, not all of the dining chairs were used in the living room.)

Arrangement

In no instance was a completely separate dining room provided. The limitations of space in houses of this type eliminate consideration of separate dining rooms.

In all plans except Plan B, additional dining space was provided in the kitchen; however, in Plan C the use of the kitchen-dining space was prohibited for parts of the test period, thus requiring eating in the dinette section of the living room.

In Plan B, the dinette area was defined from the living room by a reduction in the width of the room, and by the house entrance and passage to the hall of the house. In Plans C, G, I, and J, the dinette area is formed by a slight alcove; in Plans A, D, E, F, and H, the dinette is not defined by the room shape.

Room Sizes

In the following table, primary passage areas are deducted from the gross areas of the living-dining rooms to give net room area. Primary passage areas are those areas which must be kept open to allow passage between living room, the front door, and the bedroom hall. When alternate paths are provided between these three points, the gross area of the room is not reduced. The remaining net area of the room is composed of space for secondary passage, and space for equipment and activities. Secondary traffic areas are usually kept open, but may be blocked temporarily by a chair, etc., without preventing passage to the room. For illustrations of the living room, see the plans preceding this section.

TABLE 34 -- SIZES OF LIVING-DINING ROOMS

<u>Plan</u>	<u>Major Dimensions</u>		<u>Gross Area</u> (sq. ft.)	<u>Net Area</u> (sq. ft.)
A	11'- 7" x 21'- 2"		245.177	168.926
B	L.R.	11'- 6" x 15'- 0" (172.500 sq. ft.)	263.504	229.004
	Dinette	8'- 8" x 10'- 6" (91.004 sq. ft.)		
C	L.R.	12'- 0" x 17'- 4" (208.000 sq. ft.)	238.629	238.629
	Dinette	2'-11" x 10'- 6" (30.629 sq. ft.)		
D	13'- 4" x 14'-11"		198.888	177.639
E	11'- 0" x 14'-11"		164.087	119.336
F	11'- 8" x 17'- 8"		206.121	206.121
G	L.R.	10'- 6" x 15'- 6" (162.750 sq. ft.)	273.164	173.164
	Dinette	7'- 7" x 13'- 4" (110.414 sq. ft.)		
H	12'- 4" x 17'- 2"		211.721	174.721
I	L.R.	11'- 0" x 16'- 8" (183.337 sq. ft.)	224.669	224.669
	Dinette	4'- 0" x 10'- 4" (41.332 sq. ft.)		
J	L.R.	10'- 6" x 20'- 0" (210.000 sq. ft.)	248.664	223.664
	Dinette	4'-10" x 8'- 0" (38.664 sq. ft.)		

LIVING-DINING ROOM
Family Reactions

Plan

Family I

- 1-A-1 "We don't use the dining room every day; hence the space taken up by a separate dining room isn't wasted. It is more convenient to entertain." Overcrowded at mealtime for large groups. No criticism of living-room size.
- 1-B-2 Front-door callers interfere with meal. Did not like having to clear dining table right after meal. Too many trips from kitchen to dining area. Living room always large enough for own family activities, usually large enough for entertaining guests.
- 1-C-3 Dinette space is crowded by end table at south of davenport. Dinette set is too small. Object to not having two places to eat (during period when table was removed from kitchen). Like vestibule arrangement and circulation--willing to sacrifice the four feet necessary for vestibule.
- 1-D-4 Dining arrangements inadequate for guests. "I have to move all of the furniture in the east end of the living room to get table out far enough to seat a person against the wall." The room is usually large enough for family activities and for entertaining guests. Living room is "a little bit" too small. Vestibule arrangement makes living room too small.
- 1-E-5 Living room isn't large enough for large groups; would increase the living room five feet. Playroom in effect enlarges the living room. Not enough space at front door--not enough room for circulation around furniture.
- 1-F-6 Traffic through living room interferes with the dinette table and chairs. Would like more room for guest serving. Traffic areas take up too much space in living room. Living room is always large enough for own family activities, usually large enough for entertaining guests. Like location of living room on back of house. (Family always wanted this feature.)

Family II

- 2-F-1 Living room always adequate for family activities. No guests were entertained, dining portion not used.

- 2-E-2 Would rather have living room and playroom all as one. Living room always large enough for own family activities, probably large enough for entertaining guests (only one group of two people entertained). Dining space not used.
- 2-D-3 Advantages of vestibule do not overcome loss of space in living room--bookcases should be placed against the west wall to get larger living room. Room usually large enough for family activities and entertaining guests. Dining table is too small for group of six adults.
- 2-C-4 "Children play in the west end of kitchen; therefore, it is best for us to eat in the dinette." All meals eaten in dinette. Living room always large enough for family activities and entertaining. (No guests were entertained during this period.)
- 2-B-5 Living room always large enough for family activities and entertainment of guests.
- 2-G-6 Arrangements for recreation are "plenty big enough". (No visitors during this period.) Room sizes are satisfactory.

Family III

- 3-H-1 Dinette space is too small for more than four persons. Would provide 20 more square feet. Living-room size is satisfactory.
- 3-I-2 Dinette too crowded for six persons; could seat more in last plan (3-H-1). In building a new house would try to have a fairly good-sized dining room. Living room is usually large enough for own family activities, seldom large enough for entertaining guests--only large enough for small groups. The living room-dining area is too small--should have 4 feet more in the living room and 2 feet more in the depth of the dinette.
- 3-J-3 Dining space is satisfactory for arranging chairs and table, but the table is too small--prefer an extension type. Need a little more space in the dinette area. "At times we would like to have the living room larger". Living room is usually large enough for own family activities and for entertaining guests. Would like the living area to open out to the back as well as the front.

Ratings of Facilities

The families were asked to rate the facilities provided. These ratings are shown in the following tables. Ratings are in order, with "1" representing the most adequate.

The ratings of recreational facilities involve more than the living-dining room. The families considered the effects of the other rooms as well.

TABLE 35 -- RATING OF MOST IDEAL SIZE OF LIVING-DINING ROOM
Ranked in order from most adequate to least adequate (1 to 6)

Plan	Living Space			Dinette Space		
	Family <u>I</u>	Family <u>II</u>	Family <u>III</u>	Family <u>I</u>	Family <u>II</u>	Family <u>III</u>
1-A-1	3			5		
1-B-2	5			4		
2-B-5		2			2	
1-C-3	1			1		
2-C-4		1			3	
1-D-4	4			3		
2-D-3		4			5	
1-E-5	6			6		
2-E-2		4			4	
1-F-6	2*			2*		
2-F-1		1			1	
2-G-6		3*			1*	
3-H-1			3			3
3-I-2			2			2
3-J-3			1*			1*

(*) Family's own plan.

TABLE 36 --- RATING OF SERVING AND EATING FACILITIES
Ranked in order of most adequate to least adequate (1 to 6)

Plan	Family Arrangements						Guest Arrangements					
	Serving			Eating			Serving			Eating		
	Fam. <u>I</u>	Fam. <u>II</u>	Fam. <u>III</u>	Fam. <u>I</u>	Fam. <u>II</u>	Fam. <u>III</u>	Fam. <u>I</u>	Fam. <u>II</u>	Fam. <u>III</u>	Fam. <u>I</u>	Fam. <u>II</u>	Fam. <u>III</u>
1-A-1	5			5			5			5		
1-B-2	6			6			6			6		
2-B-5		4			3			2			2	
1-C-3	1			1			1			1		
2-C-4		3			3			3			3	
1-D-4	4			4			2			2		
2-D-3		2			4			4			4	
1-E-5	2			2			3			3		
2-E-2		6			5			5			5	
1-F-6	3*			3*			4*			4*		
2-F-1		5			2			6			6	
2-G-6		1*			1*			1*			1*	
3-H-1			2			3			2			3
3-I-2			1			2			1			2
3-J-3			1*			1*			1*			1*

(*) Family's own plan.

TABLE 37 -- RATING OF HOME RECREATIONAL FACILITIES
 Ranked in order from most adequate to least adequate (1 to 6)
 (Recreational facilities are not limited to the living-dining area)

Plan	Arrangements for Own Family			Arrangements for Entertaining Guests		
	Family <u>I</u>	Family <u>II</u>	Family <u>III</u>	Family <u>I</u>	Family <u>II</u>	Family <u>III</u>
1-A-1	3			2		
1-B-2	2			5		
2-B-5		2			2	
1-C-3	6			3		
2-C-4		5			5	
1-D-4	4			4		
2-D-3		6			6	
1-E-5	5			6		
2-E-2		4			4	
1-F-6	1*			1*		
2-F-1		3			3	
2-G-6		1*			1*	
3-H-1)						
3-I-2)						
3-J-3)						
		About the same				

(*) Family's own plan.

LIVING-DINING ROOM Analysis and Interpretation

Dinette

Family I and Family III used the dinette area for guest entertaining and comments were made on the inadequate space of Plans C, D, F, E, I and J. Yet Family I rated the dinette of Plan C as the most ideal size. Family III rated the dinette in their own plan (J) the best. Family II did not do much entertaining at dinner, and when it was done the number of guests was small. As a result, there was no complaint on dining space. Family II rated the dinette of Plan G, their own plan, as being the most ideal in size. All of these highly rated dinettes (Plan C, G and J) are in the form of an alcove off the living room; all have either primary passage or secondary passage along one side. The square-foot areas are 110.414 for Plan G, 38.664 for Plan J, and 30.629 for Plan C.*

In general, the families that did entertaining were more concerned about adequate dining space. Family III actually mentioned the desirability of a room which might be used for dining, play, etc.

The ratings for serving facilities follow the same pattern with Plan I (which is similar to C) also getting a tie for first in Family III's choices.

All three families commented that the dining table was too small.

Living Room

There were fewer complaints on the size of the living room. Family I and Family II would remove the vestibule in Plan D to gain more space; Family II would do this also in Plan C. Plan E is called too small by Family I (five feet should be added); Family II says the playroom should be added to the living room.

In spite of fewer complaints on the living-room size, all families expressed a desire for a large living room, but seemed to recognize the spatial limitations of the house. It appears that the demand for a large living room is influenced primarily by two things--the prestige factor and the need for space for entertaining. Throughout the tests, the house that was reported as appearing the largest was the house that had the largest appearing living room. Thus, it is apparent that the size of the living room is important. It is in this factor that the importance of open planning is apparent. Sight distances influence apparent size. Family III selected the living room of Plan J as being the most ideal size. The room is relatively narrow, but the total length including the entry vestibule is relatively large--23'-10". Plan B also rated high on apparent size. Both of these rooms were large, but not as large as that in Plan G which was rated second in apparent size by Family II. This is probably because the sight line in the living room is relatively short.

(*) Areas given do not present a true picture of the space occupied by the dinette furniture. See plans.

Entertainment always places a heavy demand on the living room. Probably the greatest burden occurs when two or three tables of bridge are set up in the room. Bridge tables take the least amount of space when set at 45 degrees to the axes of the room; four people seated at a bridge table occupy a space approximately five feet square when seated in this manner. Furniture must be spaced to allow room for setting up bridge tables and chairs; space may be conserved by using standard room furniture, although such furniture is not usually of the proper height.

An important factor influencing the useful size of the living room is the traffic pattern through the room. When the living room is required to serve as a primary passageway, the area of the room should be increased. The test families were apparently aware of the desirability of eliminating traffic since, when they were asked to rate the living rooms according to ideal size, they chose Plans C, F and J as best. Plans C and F have no primary traffic; Plan J has a minor amount. In the case of the first two families, the rooms chosen as having the most ideal size do not have the largest gross area; they do have the largest net area. Family III's choice has the largest gross area, and has a net area only one square foot less than the largest.

There was a strong desire on the part of two families to be able to keep the living room "picked-up" so that callers could drop in. This feeling is expressed directly, and also indirectly by requests for better space for children's play, etc.

LIVING-DINING ROOM
Auxiliary Studies

Dinette

Since all three families objected to the size of the dining table (36" x 56-1/4"), additional studies were made on dining facilities with particular reference to serving guests.

A tabulation of available dining-table sizes shows a wide variance of both widths and lengths, so the problem was approached from a different viewpoint. The size of table necessary to serve six was established by determining the size of place settings and service required.

Place Settings

Place settings were determined on the basis of the following dimensions:

Plates	-	10"	Knives	-	9"
Salads	-	6"	Forks	-	7"
Saucers	-	5-3/4"	Salad	-	6"
Glasses	-	3"	Spoons	-	6"

It was determined that a formal place setting required a space 24" x 15"; informal place settings require spaces 24" x 14" or 22" x 14". (With a 30" wide table, 24 inches per person should be considered minimum.)

Serving Space

Serving space is based on the following equipment which is in reality sufficient to serve 12 persons.

Platter 12" x 16"	Vegetable 8-1/4" round	Gravy 6" x 12" oval
	Vegetable 7" x 12" oval	
	Vegetable 7" x 9" oval	

With this platter, the host setting (with service) occupies a space of 24" x 36". With a smaller platter, the host setting could be reduced to 22" x 36".

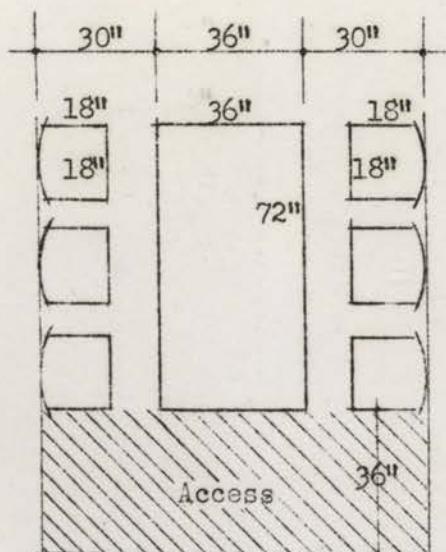
Table Size

Using the place settings and service space outlined above, six people could be served at a 36" x 80" table. This is based on two persons on each side, one person on each end.

If service is from a buffet, side table or kitchen, six people can be served in similar positions at a 36" x 68" table.

Dining Space Requirements

The arrangements discussed in the previous paragraph require chairs on four sides of the table. Probably the most economical use of space would be at a 36" x 72" table with three persons on each side, where the total space occupied would be 8'-0" x 6'-0" plus necessary access space to reach the table.



The 2'-6" space at the side permits entrance to the chair by side-stepping along the front of the chairs when they are pushed back against the wall. This is minimum chair space; a more comfortable space would be 3'-4" wide. Obviously the table will not be in this extended position at all times, but the space gained by closing the table will be added to the living space and this addition will help to create the appearance of a larger living room. It is desirable to be able to set up the table in this manner without moving other furniture.

Living Room

The wide variety of activities which are carried on in the living room plus the different furniture which may be used make the problem of establishing a minimum size very difficult. Fundamentally, it would seem that every house should have space for the furniture listed in the following table.

TABLE 38 -- REPRESENTATIVE LIVING-ROOM FURNITURE*

1	Couch or Sofa	78" long, 36" fth.
2	Upholstered Chairs	32" wide, 36" fth.
1	Radio or Television Set	36" wide, 24" fth.
1	Table	18" x 36"

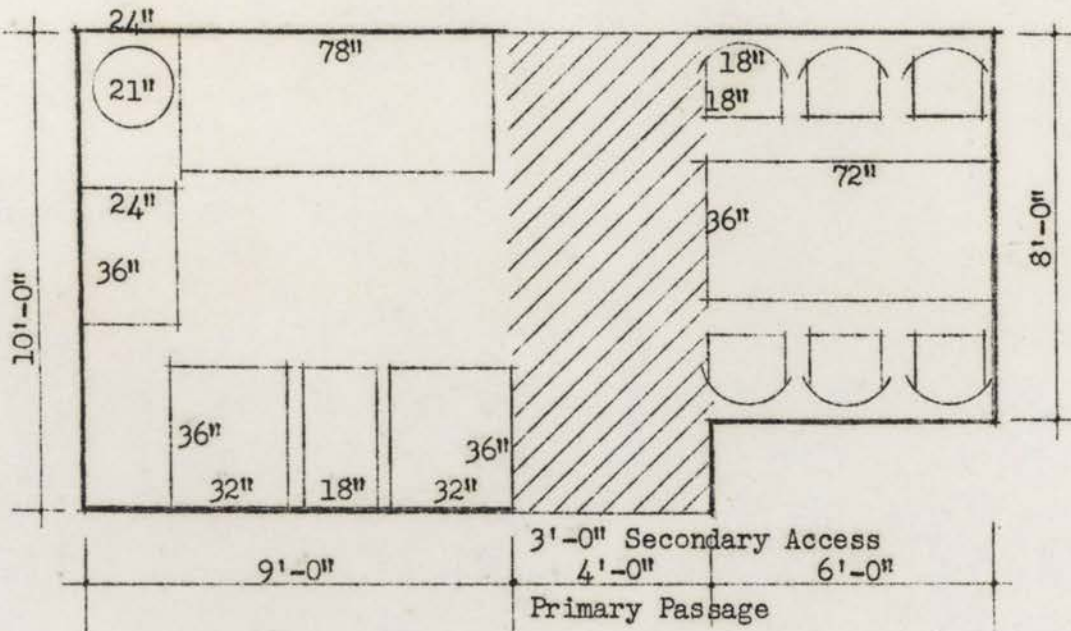
In addition, it seems reasonable that every living room or living-dining room should be planned so that provisions could be made for the temporary use of:

2 card tables
8 chairs at card tables.

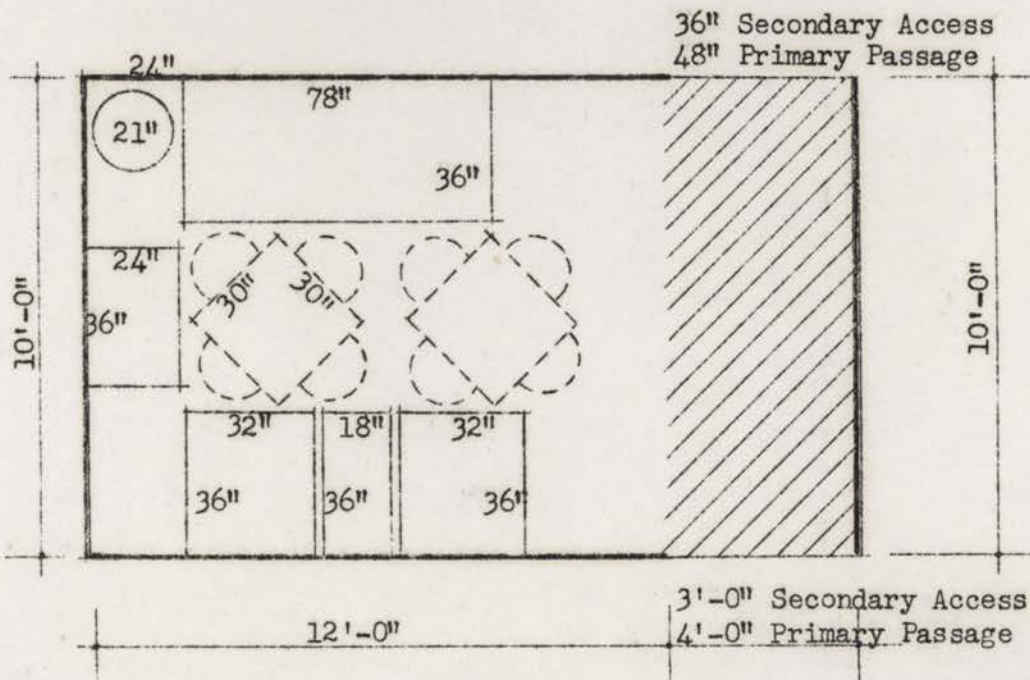
On this basis and on the basis of the dining requirements previously discussed, the minimum layouts shown on the following page for living room and living-dining room seem reasonable. The sizes shown are not useful for large parties, dancing, or for any activity requiring a large area. If studying is done, the dining section of the room would have to be used.

(*) The furniture listed is larger than that used in the experiments. Small-scale furniture is desirable in small houses; nevertheless, the house must be large enough to handle usual furniture. The dimensions shown are not average or maximum, but are representative. The list of items is reduced from that used in the test dwelling.

Minimum Living-Dining Room



Minimum Living Room



LIVING-DINING ROOM Deductions

Dinette

From the room-use information and the comments of the families, one may deduce that: (1) two dining spaces are desirable; (2) a combined living-dining room is acceptable as the second dining space; (3) an alcove off the living room is considered the best arrangement for dining in the living area; and (4) if the only dining space is in the kitchen, it should be enlarged to the sizes specified for the living-dining room.

Since the chief use of the dining space in the living room is for the entertainment of guests, the dining space should accommodate a minimum of six persons--the family and two visitors. The dining space developed in the auxiliary study on the preceding pages seems a reasonable minimum.

Living Room

The major uses of the living room are for reading and recreational purposes.

The amount of space required in the living room is also determined by the type and extent of passage and access that are required in the room. For a minimum living room, the living spaces developed in the auxiliary study on the preceding pages seems a reasonable arrangement.

LIVING-DINING ROOM
Recommendations

The establishment of a minimum size for the living-dining area of the house is difficult due to the wide variety of activities carried on in the average house. A minimum furniture arrangement (as shown in the preceding "Auxiliary Studies") seems the most logical starting point. On this basis, the minimums shown below are suggested:

Minimums for Living-Dining Room

Minimum living-room width	10'-0"	
Minimum living-room furniture space	9'-0" x 10'-0"	90 sq. ft.
Minimum dining furniture space	8'-0" x 6'-0"	48 sq. ft.
Minimum area including secondary access		168 sq. ft.
Minimum area including primary passage		178 sq. ft.

On the basis of the comments of the families living in the test dwelling, the use of a living room without dining space does not seem advisable. If such is required, however, the following recommendations are in order:

Minimums for Living Room (No Dining)

Minimum width	10'-0"	
Minimum furniture space	10'-0" x 12'-0"	120 sq. ft.
Minimum area including secondary access		150 sq. ft.
Minimum area including primary passage		160 sq. ft.

KITCHEN

Kitchens of various designs were utilized in the tests. These included one or more of the following provisions:

Work arrangement - space for equipment (appliances and storage) needed for the storage, preparation, and serving of food.

Eating in kitchen.

Space for laundry equipment.

Play space for children.

Kitchen work arrangements and eating areas will be discussed separately in this section.

KITCHEN WORK ARRANGEMENTS

Description of Facilities

Basic Equipment

The following equipment was available for use in planning kitchens:

Range

A four-burner electric apartment-size range was used. This unit was usually placed tight against adjacent counters. Dimensions: 21" wide, 25" front-to-back, 36" high plus 4" splash back.

Refrigerator

A 7 cubic foot refrigerator was used. Dimensions: 24" wide, 30-21/64" front-to-back, 54-3/8" high. A space 30" wide was allotted for the refrigerator to allow space for opening the door.

Sink Cabinet

A double-bowl 36" sink was used. The sink was mounted in a base cabinet. Dimensions: 37" wide, 24" front-to-back, 36" high with 4" splash back, 2 doors.

Base Storage Cabinets

All units 24" front-to-back x 36" high plus 4" splash back.

1 unit - 44" wide, 6 drawers, 2 doors.

1 unit - 32" wide, 3 drawers, 2 doors.

1 unit - 16" wide, 4 drawers.

Corner Counters

Used in "U"- and "L"-shaped plans for forming corners in counters.

2 units - 24" x 24" x 36" high plus 4" splash back, no storage.

Wall Cabinets

All units 14" front-to-back x 35" high, with 3 shelves.

1 unit - 44" wide, 3 doors.

1 unit - 32" wide, 2 doors.

1 unit - 16" wide, 1 door.

1 unit - 24" wide, 1 door.

Additional Equipment

Depending upon the design, additional storage space was sometimes provided in the kitchen area. Such storage was usually not a part of the work area, but the use of this added storage relieved the storage in the basic work area. The additional storage was selected from the following units:

Broom Closet

1 unit - 24" wide x 22" front-to-back x 84" high, 1 shelf, full-height door.

Closed Shelf Cabinet

1 unit - 24" wide x 22" front-to-back x 84" high, 5 shelves, full-height door.

Open Shelf Cabinet

1 unit - 24" wide x 22" front-to-back x 84" high, 5 shelves, open.

Divider Cabinets

2 units - 48" wide x 12" front-to-back x 84" high, 2 pairs of sliding doors, 4 open shelves.

Basic Facilities

The basic facilities provided in all test kitchens (Kitchen of Plan F and J excluded)* were:

Working Frontage

Range	21"
Refrigerator allowance	30"
Sink cabinet	37"
Base cabinet	92"
	<hr/>
	180" - 15'-0"

Counter

Total counter, exclusive of sink bowl and corners	92" - 7'-8"
---	-------------

With specific provisions of:

36" to right of sink bowl

30" to left of sink bowl

15" adjacent to refrigerator door

24" adjacent to range

Wall Cabinets Frontage

116" - 9'-6"

(*) Kitchens F, G, and J were planned by the test families; other kitchens were designed as part of the test plans.

Basic Arrangements

Kitchens were arranged in "U"-shaped, "L"-shaped, and corridor assemblies; with the "U"-shape being used the most often. Kitchens were arranged with the range, sink, and refrigerator in a left-to-right sequence. This is considered the normal sequence for a right-hand hinged refrigerator. After each change in kitchen arrangement, the home economist on the staff relocated all items stored in the kitchen including dishes, cooking utensils, and food. These items were replaced so as to be in as nearly an ideal arrangement as possible within the limitations of the work arrangement built. The mix center was usually located between the refrigerator and sink, the serve center adjacent to the range. In most instances, dishes were stored near the serve center.

Storage Arrangements

Storage arrangements were planned to meet or better the minimum requirements of the Small Homes Council.*

Wall-cabinet space exceeded these requirements by 8 inches, in addition to providing space for storing dish service for eight persons. The shelf space (29 feet) provided in the wall cabinets is 5 feet more than FHA requirements for two-bedroom houses and 1 foot less than requirements for three-bedroom houses.

Base cabinet storage** provided was 14 inches more than minimum requirements and 10 inches less than medium requirements, when judged by Small Homes Council scale.

General Arrangement

Kitchens F, G, and J were planned by the test families; others were designed as part of the test plans.

In several instances, work arrangements in kitchens were kept similar in order to measure other factors of kitchen design. Work arrangements in plans B, C, D, E, and I were basically the same "U"-shape arrangement with variations only in the location of the base and/or wall storage cabinets.

A comparison of kitchens is listed below:

Identical Work Arrangements

- a. 1B, 1C, 1D
- b. 2C, 2D, 2E
- c. 2G, 3H

Identical Base Cabinet Arrangements

- a. 1B, 1C, 1D, 2B
- b. 1E, 2E, 2C, 2D, 3I

(*) Small Homes Council circular, "Cabinet Space for the Kitchen".
Small Homes Council Technical Report, "Handbook of Kitchen Design".

(**) Only 24 inches under the sink bowl was counted in scoring base storage.

For Family I, Kitchens 1B, 1C, and 1D were identical; 1E was similar with more storage on the serving side of the kitchen.

Families I and II used the same kitchen in Plans 1F and 2F.

For Family II, Kitchens 2C, 2D, and 2E were identical; 2B was similar with more storage on the mixing side of the kitchen.

Families II and III used the same working arrangements in Plans 2G and 3H.

For Family III, Kitchen 3I had the same base cabinet arrangement as 1E, 2E, 2C, and 2D.

Two kitchens deviated from the norm in the equipment used. Family I omitted the 24-inch wall cabinet in planning Kitchen F. An additional shelf was added to the 44-inch wall cabinet to partially compensate for this loss. In Plan J, Family III chose to use the corner counters to obtain more counter space in the corridor-plan kitchen. These counters did not add to the storage facilities.

In some instances, additional storage facilities were added to the kitchen by use of the tall shelf cabinets (see equipment list) and/or a divider shelf.

A complete description of the kitchen work-arrangement layout is included in the table on the following page. Equipment is listed from left to right.

TABLE 39 -- KITCHEN WORK ARRANGEMENTS

Plan	Type of Arrangement	Base Cabinets	Wall Cabinets (inches wide)	Total Counter (inches)	Work Area Dimensions	Work Area** (Sq.Ft.)	Additional Storage ⁺	Rating ⁺⁺
A	"L"	RG,44 - S,16,32,RF	44,24 - 16,32	116	7 ⁵ x 11 ⁷	78.0	B, OS, CS	91
1B							-	91
1C	"U"	RG,32 - S,16 - 44,RF	44 -- 32,16,24	140	8 ⁵ x 8 ²	64.5	B	94
1D							B	94
1E	"U"	RG,44 - S,16 - 32,RF	24,16,32 -- 44	140	8 ⁵ x 7 ⁵	61.8	-	94
1F	"L"	32,S,44 - RG,16,RF	44,16,32 -	116	7 ⁷ x 11 ⁵	68.0	OS, CS	65
2E							-	
2D	"U"	RG,44 - S,16 - 32,RF	44,16 -- 32,24	140	8 ⁵ x 7 ⁵	61.8	CS	94
2C							B	
2B	"U"	RG,32 - S,16 - 44,RF	32,24 -- 44,16	140	8 ⁵ x 8 ²	64.5	-	91
2G	"L"	32,RG,16 - S,44,RF	32,16,24 - 44	116	7 ⁹ x 11 ³	77.0	-	85
3H							CS	
3I	"L"	RG,44 - S,16 - 32,RF	44,24 -- 16,32	140	8 ⁵ x 7 ⁵	61.8	OS, B	94
3J	-	24*,RG,16,S,32,24*,RF -- 44	24,32,16 -- 44	140	8 ⁰ x 15 ⁴	99.3	-	75

(*) Counter only, no base cabinet.

(**) Actual area occupied by appliances and base cabinets plus floor space four feet wide in front of this equipment.

(+) Additional storage in working area; storage in adjacent laundry area not included. OS - open shelves; CS - closed shelves; B - brooms. These cabinets 24" x 22" x 84".

(++) See Small Homes Council Circular C5.32 "Kitchen Planning Standards".

KITCHEN WORK ARRANGEMENTS
Family Reactions

Plan

Family I

- 1-A-1 Considered serving center, range, sink and refrigerator improperly located. Not enough electrical outlets near mixing center. Can't reach top shelves of kitchen cabinets. Need hooks on underside of cupboard. Doors open wrong way in cabinet over sink.
- 1-B-2 Considered kitchen too small for others to help or keep her company while she worked, or for the children to play near her, but said work was not made difficult because kitchen was too small. Kitchen badly insulated in regard to odors. Garbage disposal inadequate. Pass-through improperly located. Under "Likes", said that this kitchen saves steps and everything is handier and more convenient with same number of cabinets and work space as in the larger kitchen. Kitchen cabinets inadequate with respect to accessibility and amount of space.
- 1-C-3 Kitchen improperly located for supervision of children. Badly insulated in regard to noise. Mother is beginning to like small kitchen--likes size and door in west end of kitchen. Also likes to be able to leave ironing board up in west end of kitchen if she wants to. Cupboards and drawers are inadequate in size (drawer next to stove too shallow for convenient storage of items like potato masher); need longer wall cabinet on north wall (serving side). Not enough room for storage of perishable foods. Serving and dish storage short.
- 1-D-4 Kitchen too small to eat in kitchen. Traffic from back door to basement stairway interferes with eating. Kitchen badly located as center for general housework with respect to front door and bedrooms. Would be better if there were more counter space. Would like sink garbage-disposal unit. "It is very convenient to have the kitchen small as it is in this plan." Drawer in base cabinet too shallow. Serving and dish storage short.
- 1-E-5 Kitchen too small to eat in. Too crowded if children play in kitchen. Traffic from back door interferes with activities in the west end of kitchen. Cabinet drawers too shallow for baking equipment.
- 1-F-6 Should have window over sink. "I have had trouble finding a good mixing center--have to carry things from west end to sink area. Need more counter space, three feet. Want a garbage-disposal unit and chopping block. Stove and refrigerator are a little too close. Like kitchen on front of house." Cabinet shelves too narrow (vertical dimension).

Family II

- 2-F-1 Traffic from front and back door interferes with activities in kitchen. "Most company would come to the back door rather than the front." Need window over sink, refrigerator is in front of the east window. Cabinet over sink is in the way when work is being done at the sink. Work space is inadequate and there is no place to put garbage can. Sink and counter to right of sink should be reversed. Satisfied with present storage arrangements.
- 2-E-2 Kitchen work interfered with by other family members in the way. Kitchen too small for eating there, for company while working, or for children to play near the mother while she is working. Table space in kitchen is too tight. Light outlets not so well located for ironing and fan. Kitchen seems much more "handy" except northeast upper cabinet door opens the wrong way. Need a tray for different utensils in the base cabinet. Wall cabinet on north wall in the west end of the kitchen opens to the west---hard to get things out of it. Cleaning 2 x 2 (in hall) not so well located. Need a broom closet in the kitchen or utility room.
- 2-D-3 Kitchen too small for children to play near the mother while she is working. "I never want them in the kitchen when I am working there." Kitchen work arrangements are convenient. Satisfied with storage arrangements except for position of broom closet. Broom now stored in corner of stairway. Need a utility cabinet and a broom closet in the kitchen. Dish storage has been reversed because housewife was used to washing dishes from left to right in previous home. Northeast upper cabinet is rather inaccessible and door opens the wrong way. It is now used for dry cereals, pancake flour, sugar and flour with smaller amounts of latter on counter in cannisters. Bins have not been used this time (housewife forgot she had them).
- 2-C-4 "The present arrangement is very handy." The east corner cupboard door should swing the other way and the tall cabinet (24" x 22" x 34" closed shelves) should be east of the refrigerator.
- 2-B-5 Others are sometimes in the way when they help with the kitchen work. Sink and base cabinet next to sink should be interchanged for better arrangement of kitchen equipment. Does not like the stove next to the wall; likes the small "U". Satisfied with present storage arrangements. Seems to be plenty of room.
- 2-G-6 Kitchen is too small for children to play near mother while she works. Kitchen work arrangements are very handy.

Family III

- 3-H-1 Noise from washer is annoying in kitchen. Need a window on the east wall so that the eating space won't be so dark. Need more counter space and would like a dishwasher. Would like to move stove over to have more space between the stove and the sink. "There is a certain amount of frustration in having two avenues into the kitchen. Usually I choose to use the living-room route to the bedroom-bathroom area. I don't like to have the utility room visible from the front door." "The refrigerator is so placed that setting and clearing the table is very convenient. The window over the sink looks out over the play area of the back yard and it is easy to check on the children at play. Minimum traffic through kitchen area." "I am sold on a big kitchen, though I realize that efficient planning is equally important, probably more so. I want a "U"-type kitchen in my house. Need more cabinets--need storage space for dishes, kitchen equipment, etc., for maximum convenience.
- 3-I-2 Kitchen work sometimes interfered with by play in the west end of the kitchen, not the kitchen itself. Present work arrangements "are ideal in terms of convenience", save steps. Enthusiastic response to "U" kitchen and dining spaces both in kitchen and living room. If the phone were located differently, would put more dishes on pass-through wall. Pass-through should be placed more nearly at eye level and have greater clearance top to bottom. Would like more cupboard space on the south side for canned foods, also one more cupboard unit over the refrigerator.
- 3-J-3 Kitchen too small for children to play near mother while she works. Work counter space best they have had, but do lose space in the corner. This plan rated as best--seems more spacious. Everything works well and is comfortable. Circulation good. "The width of the kitchen is just right and the arrangement of the fixtures is very good, ideal even." "This is the most convenient kitchen I've ever been in."

TABLE 40 -- RATING OF KITCHEN-WORK ARRANGEMENTS
 Ranked in order from most adequate to least adequate (1 to 6)

<u>Plan</u>	<u>Family I</u>	<u>Family II</u>	<u>Family III</u>
1-A-1	4		
1-B-2	6		
2-B-5		2	
1-C-3	1		
2-C-4		3	
1-D-4	5		
2-D-3		3	
1-E-5	2		
2-E-2		3	
1-F-6*	3		
2-F-1		4	
2-G-6*		1	
3-H-1			3
3-I-2			2
3-J-3*			1

(*) Family's own plan.

KITCHEN WORK ARRANGEMENTS

Analysis and Interpretation

Family I

The mother of Family I suggested early that the range and refrigerator should be close together without the sink intervening; she eventually used this arrangement in her own design, 1F. She continued to prefer this arrangement after using it, although she wanted more counter space between the two appliances. (This feature plus two other features of Kitchen 1F--wall cabinets located over the sink, and the refrigerator partly in front of the window--were not approved by the research staff. The mother also reduced the amount of wall cabinets in Kitchen 1F.)

In general, the kitchen storage facilities were satisfactory except for certain problems in arrangement and details. For example, the mother objected to the shortage of storage space on the serving side of Kitchens 1B, 1C, and 1D. This was a valid objection. She also objected rightfully to the location of a wall cabinet in a corner of Kitchen 1B where it was relatively inaccessible. Storage drawers were too shallow for some of her equipment. Top shelves of wall cabinets were too high. Since the mother eliminated one wall cabinet in Plan 1F, the research staff attempted to compensate for this with added shelves in another cabinet. This resulted in the comment that the shelves were "too narrow" in the vertical direction.

This family stored two sets of dishes for eight persons respectively. The cabinet space was not designed to accommodate this large a supply of dishes.

Since the arrangement of the range, sink, refrigerator, and cabinets were identical in Plans 1B, 1C, and 1D, and very similar in 1E, it is apparent that some factor other than these influenced the rating of the kitchen work arrangements recorded by Family I. Kitchen 1C, with extra space in one end, is placed highest on the list (in spite of several negative comments about "U"-shaped kitchens.) Kitchen 1E is smaller in size than 1C, but the rear-ranged cabinets with more space on the serving side was a point in this kitchen's favor. Kitchens 1B and 1D, lowest on the list, have smallest gross room dimensions. The mother specifically said that Kitchen 1B was too small for others to help her or keep her company while she worked, or for the children to play near her. Kitchen 1F achieves its rating due to the fact that it meets the mother's personal specifications. It appears that the extra space in Kitchen 1C is the important factor in this rating.

Family II

The mother of Family II objected to the unusual features of Kitchen 2F. In general, other arrangements were considered satisfactory, even "handy", excepting that comments were made that certain kitchens were too small for other people to work in the kitchen at the same time, and too small for the children to play in the kitchen while the mother was working there.

This mother had washed dishes from left to right in previous home; in Plan 2D, the dishes were shifted from the serving side of the kitchen to the opposite side.

In Kitchen 2C, the mother commented, "The tall cabinet (24" x 24" closed shelves) should be east of the refrigerator". It is doubtful that this would prove satisfactory as this position would not give any counter space adjacent to the refrigerator.

Kitchen storage was generally considered satisfactory excepting for some complaints of cupboard doors opening the wrong way. This family had a large set of cooking-service dishes which was often stored on open shelves for purposes of display. Auxiliary storage (tall cabinets, divider shelves) was used for this purpose.

This mother objected to the plans wherein the cleaning closet was not in or near the kitchen.

In general, the ratings of the kitchen work arrangements by Family II were more closely allied to the working portion of the kitchen, and not influenced greatly by related spaces in the kitchen.

Family II rated their own design, Kitchen 2G, as the best arrangement, although it was too small for the children to play near their mother while she worked.

Kitchens 2B, 2C, 2D, and 2E are fundamentally the same, but 2B is chosen for second place over the other three. In this kitchen, the doors of the upper storage cabinets were swung in the proper direction.

Kitchens 2C, 2D, and 2E were identical and rated third by this family. Kitchen 2F was rated last, and justifiably so--it has been pointed out that there are several unsatisfactory features in Kitchen F.

Family III

Family III impressed the interviewers as being more concerned with food preparation than the previous families--a larger variety and quantity of food was stored. The chief criticism of the general arrangements was lack of counter space and storage space. In Kitchen 3H (same work arrangements as 2G) the mother asked for more counter space between the sink and the range--there was only 16 inches of counter front plus the corner counter.

Kitchen storage arrangements were generally inadequate for this family due to the amount of food and equipment which had to be stored. This condition existed in spite of the fact that the mother was relatively tall and could make fuller use of the wall cabinets. This family had three sets of dishes and a wide variety of foods.

Family III considered their own design, Kitchen J, the best kitchen. In their design, the family was influenced by a proposed remodeling of their own home. The basic space and door openings were determined in this manner.

In designing the kitchen, corner counter units were used to extend the counter front space of their layout. The kitchen is basically a one-wall layout with the exception that the mix center was placed opposite the refrigerator. The mother stated, "This is the most convenient kitchen I've ever been in." This is an interesting statement considering the fact that there was bound to be some crowding at the end of the kitchen where the eating space was located.

Kitchen 3I (essentially the same as Kitchen C) was rated second. The mother liked the "U"-shaped arrangement.

KITCHEN WORK ARRANGEMENTS

Deductions

The basic layout of a kitchen does not seem to be too significant--corridor, "L", or "U" may be used provided it is properly designed. Although "U" kitchens were ranked well by all families, no family chose this shape for the final design. It appears that the basic shape is strongly influenced by the desire to provide adequate space for kitchen eating.

The basic working facilities provided in these kitchens appear to be a minimum for families of this size and make-up.

KITCHEN WORK ARRANGEMENTS Recommendations

To establish standards for a reasonable minimum kitchen work arrangement for a dwelling for the type of family represented by the three test families, it would be necessary to make some adjustment in the space allotments used in the test plans.

As most ranges sold are 39" wide, 42"* should be allowed for a range. The space allotment for the refrigerator should be increased to 36"*.

The basic space requirements for the work arrangements would then become:

Working Frontage		
Range	42"*	
Refrigerator	36"*	
Sink Bowl	36"	
Base Cabinets	74"**	
	<hr/> 188"	- 15'-8"
Wall Cabinets		
Includes 42"* for dishes for eight persons.	116"	- 9'-8"
Counter, exclusive of sink bowl and corners		
	92"	- 7'-8"
With specific space of:		
36"* to right of sink bowl		
30"* to left of sink bowl		
15"* adjacent to refrigerator		
24"* adjacent to range.		

(*) These recommendations are published in the Small Homes Council circulars, "Cabinet Space for the Kitchen" and "Kitchen Planning Standards".

(**) Reduced from 92" since a large range has approximately 18" of storage space.

KITCHEN EATING FACILITIES
Description of Facilities

Furniture and Equipment

- 1 Table - Drop-leaf Duncan Phyfe kitchen table with Formica finish.
Dimensions: 30" wide x 51" long (extended) x 30" high.
In unextended position, 21" long.

4 Chairs

Arrangement

All plans excepting 1B and 2B had space for the kitchen table and chairs. In some cases, this space was quite adequate; in other cases, the space was very inadequate. The evaluation of adequacy on the basis of usual standards is shown in Table 41 on Page 127.

KITCHEN EATING FACILITIES

Family Reactions

The comments received regarding the adequacy of the space available for eating in the kitchen are tabulated on the following page. Included with this table is an evaluation of the kitchen eating facilities on the basis of usual standards.

In addition, Table 36, "Rating of Serving and Eating Facilities", should be considered in the analysis of the kitchen eating space.

TABLE 41 -- FAMILY REACTION TO KITCHEN EATING FACILITIES

<u>Plan</u>	<u>Family Reaction</u>		<u>Evaluation on Usual Standards</u>
	<u>Family I</u>	<u>Family II</u>	
1-A-1	Satisfactory.		Chairs interfere with opening of cupboard, otherwise <u>adequate</u> .
1-B-2*	Would like to eat in kitchen.	Liked arrangement but ate some meals in kitchen standing up.	
2-B-5			
1-C-3	Satisfactory.	Table never used in kitchen.	Reduces one passage to emergency dimensions, otherwise <u>adequate</u> .
2-C-4			
1-D-4	Too small.	Too small.	Inadequate.
2-D-3			
1-E-5	Too small.	Too small.	Very inadequate.
2-E-2			
1-F-6	Satisfactory.**	Satisfactory.	Adequate.
2-F-1			
2-G-6		Satisfactory.**	Inadequate.
<u>Family III</u>			
3-H-1	Satisfactory.		Adequate.
3-I-2	Satisfactory.		Chairs overlap traffic space, otherwise <u>adequate</u> .
3-J-3	Satisfactory.**		Table overlaps work space, occupied chairs overlap work space. Inadequate.

(*) No kitchen eating area.

(**) Family's own plan.

KITCHEN EATING FACILITIES

Analysis and Interpretation

During all the test periods of the three families, only one instance occurred when the majority of the meals were not eaten in the kitchen if dining space was available. (Even this instance was somewhat of a special case, as the family had been asked not to eat in the kitchen for the first half of the test period, and chose to continue this arrangement for the latter portion of the month.)

The desire of the families to eat in the kitchen is emphasized by the fact that kitchen dining was continued under most adverse conditions. In several instances space for eating facilities was very inadequate (see Plans D and E) and in other cases was inconvenient by ordinary standards (see Plans G and J), yet almost all family meals were eaten in the kitchen.

In general, kitchen eating was found more convenient as serving was easier and cleaning problems were lessened. On the other hand, there was some objection to eating where the kitchen muss was visible; nevertheless, the convenience factor usually took precedence.

The rating of the serving and eating facilities for each house plan is shown in Table 36 on Page 101.

It is difficult to analyze these responses so as to arrive at a satisfactory conclusion regarding the desirable character of kitchen eating space. The space in Plan E was considered too small by both families, yet it rates as second most desirable for Family I. Ignoring the families' own plans, Plan C (and similar Plan I) stands up well. This plan has an eating space in one end of the kitchen, but isolated from the working area. However, this isolated arrangement was not used by any family in their own design.

KITCHEN EATING FACILITIES

Deductions

The experience of this project would seem to indicate that it is necessary to provide space for dining in the kitchen. A certain amount of isolation plus natural light is desirable, but these items may be sacrificed to other over-all house requirements.

The amount of space actually used for a kitchen eating area is often less than would be considered desirable by most standards.

KITCHEN EATING FACILITIES
Recommendations

Space for kitchen dining should be included in all houses designed for families of the type represented by the test families.

Space for the kitchen dining should be sufficient to allow room for:

1 table, 2'-6" x 4'-0" minimum
4 chairs

or

1 table, 2'-6" x 4'-0" minimum
2 built-in benches

A space 6'-6" x 4'-0" is desirable for the table and chairs. (The 6'-6" dimension may be reduced when built-in benches are used.)

(In minimum conditions, a certain amount of overlapping between chair space and the 4'-0" work space in front of certain appliances, cabinets, or counters may be tolerated. The chairs may be occupied during eating without excessive interference with serving operations. This proved to be the case in Plan J even with the width of the work space reduced to 3'-6". It is important that any overlap of work space floor area and dining chair area be arranged so that no interference occurs with refrigerator or range. It should be possible to open the refrigerator door and oven door to a full ninety degree opening without moving an occupied chair.)

BEDROOMS
Description of Facilities

General

Various bedroom arrangements were utilized in the tests. Bedrooms were expected to provide for:

Sleeping
Dressing, including clothes-storage arrangements

In addition, the families often used the bedrooms for the following activities:

Children's play
Sewing
Ironing
Storage for items other than clothes

Furniture and Equipment*

Parents' Room

Bed
82" long, 53" wide, including 8" attached bookcase headboard, Hollywood type.

Storage Chests
2 units, 24" wide, 24" fth, 36-1/2" high, special design, 5 drawers.

Closets
2 units, 45-3/4" wide, 96" high, 28" fth (including accordion doors), 1 pole, 2 shelves, raised floors.

Chair
Usually brought from dining area.

Children's Room(s)

Bed
80" long, 35" wide, 21" high.

Bed
76" long, 31" wide, 21" high; can be collapsed to trundle under bed above.

Storage Chests
2 units, 24" wide, 24" fth, 36-1/2" high, special design, 5 drawers.

(*) See illustrations of furniture, pages 68-73.

Closets

2 units, 45-3/4" wide, 96" high, 28" fth (including accordion doors), 1 pole, 2 shelves, raised floors.

Chair

Usually brought from dining area.

Arrangement

All houses had either two or three bedrooms, the variance occurring in the children's bedrooms. Three basic arrangements were tried for children.

1. One bedroom for both children.
2. One divided bedroom for both children.
3. One bedroom for each child.

Storage arrangements were planned so that each person could have 3'-10" of rod for hanging clothes, and a five-drawer chest. In some instances, the test families placed the drawer chests in the closets of the children's rooms resulting in a reduction in available rod space.

Room Sizes

Room sizes and areas are recorded in the following table. Basic area is the area of the room determined without reference to door alcoves, etc. Actual area, as compared to basic area, may be increased due to addition of the door alcoves, or decreased due to the subtraction of the thickness of the accordion doors extending into the room.

TABLE 42 — SIZES OF BEDROOMS
(Areas are given in square feet)

Plan	MASTER BEDROOM *			BOY'S ROOM *			GIRL'S ROOM *		
	Dimensions	Basic Area	Actual Area	Dimensions	Basic Area	Actual Area	Dimensions	Basic Area	Actual Area
1-A-1	10'-8" x 11'-10"	126.22	126.22	10'-8" x 11'-8"	119.31	119.31	10'-8" x 11'-8"	119.31	119.31
1-B-2	10'-8" x 11'-0"	117.34	118.80**	8'-0" x 10'-6"	84.00	92.33	7'-5" x 10'-10"	80.35	80.35
2-B-5			117.34	8'-0" x 10'-6"	84.00	88.33	7'-5" x 10'-10"	80.35	80.35
1-C-3	9'-6" x 12'-0"	114.00	116.89	7'-8" x 11'-10"	90.72	90.72	7'-8" x 11'-10"	90.72	90.72
2-C-4									
1-D-4	9'-10" x 11'-0"	108.16	105.60	7'-10" x 9'-10"	77.02	77.02	7'-10" x 9'-10"	77.02	75.75
2-D-3									
1-E-5	9'-10" x 9'-4"	91.77	89.21	7'-10" x 7'-10"	61.36	69.36	7'-10" x 9'-10"	77.02	75.75
2-E-2				7'-10" x 9'-10"	77.02	75.75	7'-10" x 7'-10"	61.36	69.36
1-F-6	7'-10" x 12'-0"	84.55	84.55 ⁺	8'-10" x 9'-4"	82.44	87.77	9'-4" x 8'-6"	79.33	88.66
2-F-1									
2-G-6	10'-7" x 11'-6"	121.70	121.70	11'-0" x 7'-8"	84.34	84.34	8'-3" x 10'-9"	88.69	88.69
3-H-1	10'-8" x 9'-10"	104.89	108.39	7'-2" x 9'-0"	64.50	71.17	8'-3" x 7'-9"	63.94	69.37
3-I-2 ⁺⁺	9'-0" x 12'-8"	114.00	119.84	8'-3" x 12'-4"	101.75	101.75	8'-3" x 12'-4"	101.75	101.75
3-J-3	10'-2" x 11'-6"	116.92	116.92	10'-6" x 11'-2"	117.25	117.25	10'-6" x 11'-2"	117.25	117.25

* Actual area, as compared to basic area, may be increased due to addition of door alcoves; decreased due to thickness of accordion doors extended into rooms.

** A difference in door location reduced the actual area to 117.34 square feet for Plan 2-B.

+ Room is "L" shaped; major dimensions are shown.

++ Plan I is similar to Plan C.

BEDROOMS
Family Reactions

Plan

Family I

- 1-A-1 Would like to use parents' bedroom as a study or sewing room if size would allow. Children's bedroom is too close to living room, sleep disturbed. Prefer separate bedroom for each child. Guest room considered desirable. Likes present storage arrangements.
- 1-B-2 Would use parents' bedroom as a study, a sewing room, and an office if space would permit. The children's bedrooms are too small to be used for entertaining their friends; girl's bed will go in just one place in the room, and boy's bedroom is not large enough to permit him to play with his train and other toys. Both children are disturbed by noise from other rooms--boy by noise from the kitchen and living room, girl by noise from the bathroom. Boy's bedroom has only one window. Guest room considered unnecessary. There is more storage room than needed for the things actually in use; however, the shelves are filling up rapidly since there is room to store items. There would not be adequate storage for all the possessions if they were all brought from the other house.
- 1-C-3 Children's bedroom too small for proper arrangement of the furniture, making the bed, convenience in cleaning, traffic and play. Closets are large enough but one is behind the bedroom door. Prefer two bedrooms for the children. Parents' bedroom too small for proper arrangement of furniture, convenience in cleaning, traffic, and dressing (between bed and chest); closets should be on the south wall. Guest room considered desirable. Present storage arrangements are fair.
- 1-D-4 Boy's bedroom too small to play with train; used by mother for ironing. Can't isolate the children as they can open sliding partition whenever they want to. Mother likes her bedroom on the south side of the house. Present storage arrangements are fair. Space is filling up; have added more hat boxes in bedroom closets as well as three fishing tackle boxes and five rods.
- 1-E-5 Children's bedrooms are too small for proper arrangement of furniture, making the bed, convenience in cleaning, traffic and play (especially boy's bedroom). Parents' bedroom is too small for proper arrangement of the furniture, making the bed, convenience in cleaning and traffic. Mother would like to have the children's bedroom farther away from the parents' bedroom. Storage space is becoming more and more crowded. Some things are being weeded out. More clothes have been added to each closet, especially for feminine members of family. More playthings have been added for children,

1-E-5 (con't)

especially for girl who had her fourth birthday April 19. Extra cabinet for playroom storage allows each child an area of $27\text{-}1\frac{1}{2}$ cubic feet for storage (two shelves approximately $3 \times 1\text{-}1\frac{1}{2}$). An extra half shelf would make storage more accessible.

1-F-6

Size of children's bedrooms is fine. Folding wall between the children's bedrooms considered inadequate as they can open it at will. Parents' bedroom too small for making the bed, cleaning, and traffic. Mother prefers to have children's bedrooms farther away from parents' bedroom. Not quite enough storage space. Best arrangement of all the plans. More closets and larger closets desired and needed. Extra hall closet for luggage, sport equipment, card tables being put in own home. Extra linen closet needed.

Family II

2-F-1

Children's bedrooms are also used for play. Mother likes the folding-wall arrangement for play, ease in cleaning, and ventilation, but the children fight about having it open or shut. Window should be nearer the head of the bed. Parents' bedroom is also used for sewing. "We have found that we can get by with a smaller bedroom; I can't turn the bed east and west though." There seems to be plenty of storage space, even if all their things were here.

2-E-2

Children's bedrooms also used for playing and reading. Girl's bedroom too small for proper arrangement of furniture, especially if the chest is out of the closet. There is only one window in girl's bedroom. Parents' bedroom also used for sewing and reading. Bedroom door has to be closed to get into man's closet. Mostly satisfied with present storage arrangements. Man's closet obstructed by door.

2-D-3

Children's bedrooms also used for play. Boy's room too small for rearrangement of the furniture. Mother likes sliding partition because two rooms can be made into one large room; children no longer fight now that the novelty has worn off. The only drawback is noise transmission. Likes size of the parents' bedroom—"It is large enough". Satisfied with present storage arrangements. Boy uses hall space for toys and games. Does not like folding-wall but mother and father do consider this a good feature.

2-C-4

Children's bedroom too small for rearrangement of furniture, traffic within the room, and for both children to play in it. One of the children dresses in the bathroom. To have three bedrooms would sacrifice an eating space in the kitchen, a large living room, or a separate dining room. Parents' bedroom too large. Mother lacks privacy in dressing. Guest room considered desirable. Storage arrangements OK. Some winter clothing has been added but there is still ample space. 18×24 cabinets are empty and one lower section of 1×4 is empty.

- 2-B-5 Not enough windows in boy's room. Ventilation inadequate in both of the children's bedrooms. Guest room considered unnecessary. Would choose three bedrooms and a small living room rather than two bedrooms and a large living room. Storage arrangements OK. There seems to be plenty of room. Mother of wife likes this plan--seems more spacious than the others.
- 2-G-6 Children's bedrooms are also used for play. Like the boy's bedroom with bookshelves in it for toys; like it isolated from the girl's bedroom--that way the children don't fight. Size of girl's bedroom is OK. Parents' bedroom also used for folding clothes to be ironed. Parents' bedroom is a nice size, but need another closet. Almost satisfied with storage arrangements. Coats and other heavy garments are in hall closet. Single closet in master bedroom is crowded "but some things could be put away".

Family III

- 3-H-1 Children's bedrooms are too small for entertaining friends; children use the living room. Dressing arrangements of father and mother inadequate because of lack of space and interference with other activities. Both prefer to dress in the bathroom. Parents' bedroom too small for traffic within the room. Mother wants three large bedrooms and a large living room. (When she moved in, she wanted just two large bedrooms but now prefers three.) Would sacrifice dinette, utility room and large living room to have three bedrooms. Later said, "Don't know whether we would have two large bedrooms or three smaller ones" in their own house. Not enough storage except for temporary living. Clothes closets fine. Dead storage would be completely inadequate for accumulations.
- 3-I-2 Dressing arrangements for mother inadequate because of distance between where her clothes are and dressing place when she dresses in bathroom or kitchen. Need more space in their bedroom for dressing. Ventilation would be better with old-fashioned low windows in the real hot weather. Children's bedroom not large enough for making bed, convenience in cleaning, or for use as a playroom. Should be at least two feet wider. Children's sleep is disturbed by noise from the bathroom-laundry when washer is going. Mother would prefer one large bedroom for the children now instead of two small ones, but would sacrifice an eating space in the kitchen, a utility room, a separate playroom and a separate dining room to have three bedrooms. In building their own house, they would provide two bedrooms and expand later by building an additional bedroom. Guest room is desirable. Storage is very well provided.

3-J-3

This is the largest bedroom the children have had and they play in it for hours at a time. While children are at this age, mother would rather have one large bedroom for them instead of two small ones. When they get older, they will need two bedrooms. Under disadvantages, she said, "When the two children are in one room, they are slow in getting to bed." Would rather have old-fashioned low window. Guest room is desirable. This plan rated as best for storage--seems more spacious. Everything works well and is comfortable, circulation good.

TABLE 43 -- RATING OF MASTER BEDROOM
Ranked in order from most adequate to least adequate (1 to 6)

Plan	Most Ideal Size			Sleeping Arrangements		
	Family <u>I</u>	Family <u>II</u>	Family <u>III</u>	Family <u>I</u>	Family <u>II</u>	Family <u>III</u>
1-A-1	1			4		
1-B-2	2			1		
2-B-5		2			2	
1-C-3	3			5		
2-C-4		4			3	
1-D-4	3			1		
2-D-3		3			5	
1-E-5	5			2		
2-E-2		5			6	
1-F-6*	6			6		
2-F-1		6			4	
2-G-6*		1			1	
3-H-1			(**)			3
3-I-2			(**)			2
3-J-3*			(**)			1

(*) Family's own plan.

(**) No data taken.

TABLE 44 -- RATING OF BOY'S BEDROOM
Ranked in order from most adequate to least adequate (1 to 6)

Plan	Most Ideal Size			Sleeping Arrangements		
	Family <u>I</u>	Family <u>II</u>	Family <u>III</u>	Family <u>I</u>	Family <u>II</u>	Family <u>III</u>
1-A-1*	4			5		
1-B-2	2			1		
2-B-5		5			4	
1-C-3*	6			6		
2-C-4		6			6	
1-D-4	3			3		
2-D-3		2			5	
1-E-5	5			4		
2-E-2		4			3	
1-F-6**	1			2		
2-F-1		3			2	
2-G-6**		1			1	
3-H-1			(+)			2
3-I-2*			(+)			1
3-J-3* **			(+)			1

(*) Only one bedroom for children.

(**) Family's own plan.

(+) No data taken.

TABLE 45 -- RATING OF GIRL'S BEDROOM.
Ranked in order from most adequate to least adequate (1 to 6)

<u>Plan</u>	Most Ideal Size			Sleeping Arrangements		
	<u>Family I</u>	<u>Family II</u>	<u>Family III</u>	<u>Family I</u>	<u>Family II</u>	<u>Family III</u>
1-A-1*	4			5		
1-B-2	2			1		
2-B-5		5			2	
1-C-3*	6			6		
2-C-4		6			6	
1-D-4	3			4		
2-D-3		3			5	
1-E-5	5			3		
2-E-2		4			3	
1-F-6**	1			2		
2-F-1		2			4	
2-G-6**		1			1	
3-H-1			(+)			1
3-I-2*			(+)			2
3-J-3* **			(+)			2

(*) Only one bedroom for children.

(**) Family's own plan.

(+) No data taken.

BEDROOMS

Analysis and Interpretation

Both Family I and Family II consider the third bedroom desirable. In planning their own house for the sixth month, these families provided three bedrooms. Family I was willing to sacrifice almost any feature excepting the large living room in order to get the third bedroom. Family III vacillated between wanting two bedrooms and three; the mother finally settled for two in her own plan (3-J-3) but remarked she would want three bedrooms when the children grew older.

After the families had completed their test periods, they were asked to rate the bedrooms generally on their sleeping arrangements and specifically on the most ideal size. With respect to ideal size of the parents' bedroom, Family I listed their preferences in exact order with the size of the room--the larger the room, the better. Family II and Family III followed the same order very closely.* Family II selected their own design as the best bedroom--this room has 121.70 square feet; Family I selected a bedroom with 126.22 square feet as the most ideal size; Family III chose a room of 116.92 square feet. Each family selected its own design as the most ideal size for the children's bedrooms. These bedrooms varied from 82 to 88 square feet in size for the single rooms, and 117.25 square feet for the double room of Family III.

The shape of the room definitely entered into the picture in Family I's design for the children's bedrooms. A room that was nearly square was more acceptable to this family than a rectangular room. Family I originally felt that the folding partition between the two children's bedrooms was desirable and specified it in their own design, but then later felt that a complete division was more suitable. Family II preferred to separate the children completely.

The worst bedroom for the children, both for size and sleeping arrangements, was the 90.72 square foot double bedroom in Plan C. It is interesting to note that this was considered unsatisfactory although it would be accepted by the Minimum Property Requirements of the Federal Housing Administration, which stipulate that the minimum size of the second bedroom in a two-bedroom house should be 70 square feet. For families of this size the data shows that the families expect both bedrooms of a two-bedroom house to be designed as double bedrooms. This is obvious since the space requirements for the children's room are at least equal to the usual double bedroom, as the children would be expected to have separate beds.

In the three-bedroom house, the information points in a different direction. Both Family I and Family II are willing to have a parents' bedroom of 120 square feet or more and two children's bedrooms of only 80 square feet or more. This would not meet FHA minimum requirements which require the first two bedrooms of the three-bedroom house to have 100 square feet each.

(*) Ratings of sleeping arrangements used for Family III.

BEDROOMS

Auxiliary Studies

Furniture for Bedrooms

Furniture used in the bedrooms of the test dwelling was not typical in every respect and, therefore, additional investigations were carried out to establish sizes of typical bedroom equipment.

Double Beds

Measurements of double beds were taken from catalogs and from furniture on display in showrooms.

The width of 24 double beds varied from 52" to 59" with the median being 56.625" and the average 56.58". Twenty-two of the 24 beds were 58" or less wide.

The length of 20 beds varied from 76" to 82", with the average and median being 79.5". Seventeen of the 20 beds were 81" or less in length.

Suggested dimensions for design:

Length of double bed - 81" or 6'-9".
Width of double bed - 58" or 4'-10".

Single Beds

The width of 12 single beds (twin size) varied from 41" to 43", the median being 41-1/2" and the mean 41.83". Six of the 12 beds were 42" or less wide. All beds were 81" or less in length.

Suggested dimensions for design:

Length of single (twin) bed - 81" or 6'-9".
Width of single (twin) bed - 43" or 3'-7".

Chests

A total of 93 chests (excluding those designated as "commode" or "night stand") were tabulated with widths varying between 23" and 51". Most common width was 30" (15 chests) and 32" (11 chests). Of the chests:

84 of 93 were 36" or less in width
90 of 93 were 42" or less in width
92 of 93 were 48" or less in width

Front-to-back measurements of 93 chests varied from 14" to 21", this dimension being 16" for 27 chests, 18" for 18 chests, and 15" for 17 chests. Of the chests:

79 of 93 were 18" or less front-to-back

90 of 93 were 20" or less front-to-back

Suggested dimensions for design:

Front-to-back - 20"

Width - 42"

Dressers

The width of 17 dressers varied from 39" to 48" with seven dressers being 40" wide. Of the dressers:

14 of 17 were 42" wide or less

17 of 17 were 48" wide or less

The front-to-back dimensions of 17 dressers varied from 15" to 21", with eight dressers being 18" from front-to-back. Of the dressers:

13 of 17 were 18" or less front-to-back

16 of 17 were 19" or less front-to-back

Suggested dimensions for design:

Front-to-back - 20"

Width - 42"

Vanities

The widths of 32 vanities varied from 32" to 50", with six vanities being 44" wide and five being 46" wide. Of the vanities:

20 of 32 were 44" or less wide

26 of 32 were 46" or less wide

30 of 32 were 48" or less wide

The front-to-back dimensions varied from 16" to 23" with 13 vanities having the dimension of 18". Of the vanities:

21 of 32 were 18" front-to-back

29 of 32 were 20" front-to-back

Suggested dimensions for design:

Front-to-back - 20"

Width - 48"

Of the drawer, chest, etc., type of storage, each bedroom should have one chest or dresser 20" x 42" or one vanity 20" x 48" for each person.

Equipment--Use Space

A certain amount of space is required to use and service the furniture and equipment in the bedroom. Studies on the amount of space needed are developed below.

Space for Access to Beds

Various recommendations have been given for the amount of space required around a bed to allow access for use of the bed and for making the bed.

For double beds, clearance on both sides

At side, clearance from wall	2'-0"	Ref. 1
At side or foot, clearance from chest of drawers	2'-6"	Ref. 2
At foot, clearance from wall	2'-0"	Ref. 1

For single beds

At side, clearance	1'-6"	Ref. 3
At side, clearance from wall	2'-0"	Ref. 2
At side, against one wall, clearance from opposite wall	4'-0"	Ref. 1
At side, clearance from dresser	3'-0"	Ref. 1
At foot, clearance from wall	2'-0"	Refs. 1,2,3

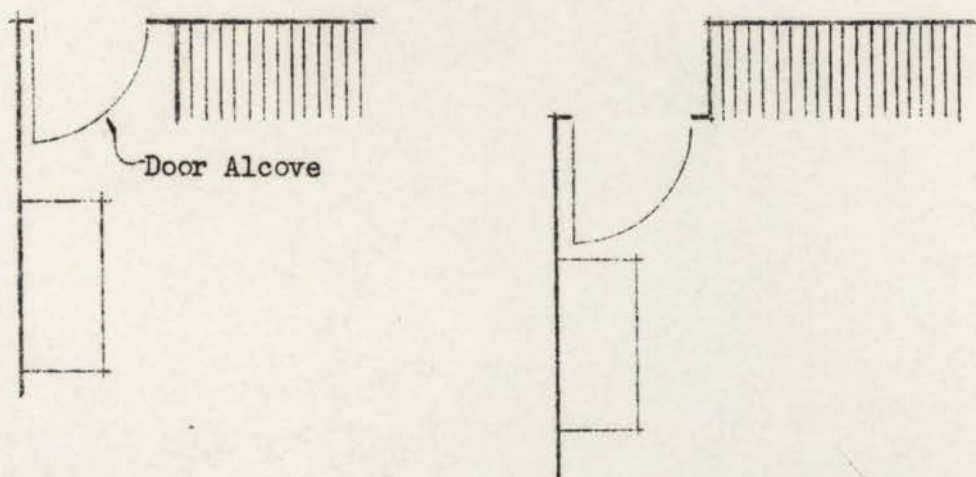
Twin-bed group

Between beds, clearance	1'-4"	Ref. 1
At side, clearance from wall	2'-0"	Ref. 1

A study of the clearances actually used for bed-making in the test dwelling shows that very small clearances may be used. One record shows the use of a 10-inch clearance for making the double bed. Other beds are made by the expedient of rotating the bed out from the wall. The amount of rotation (measured by its clearance at the foot of the bed) was about 18 inches. Beds can be made in relatively tight places by means of moving the bed several times during the operation. The clearances shown in the diagram on page 146. suffice for the design of most bedrooms; minimum bedrooms (for sleeping and dressing only) based on these clearances and the furniture study are shown on the following pages.

Several bedrooms were planned so that there was an extension of space beyond the basic dimensions of the room. This "door alcove" was often formed by clothes closets as shown on the next page.

-
- (1) "Contemporary Houses Developed from Room Units".
 - (2) TTS, 1950 Ed., p. 161-162-163.
 - (3) "Planning the Home for Occupancy", p. 19.

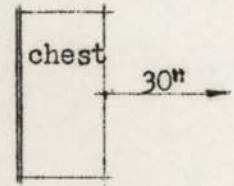
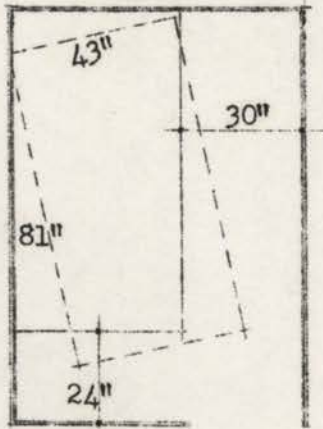


Such a door adds space to the bedroom, but the space is not usually useful. Passage space is required regardless of the position of the door. Due to this fact, door alcoves should not be counted in the determination of the space in the room.

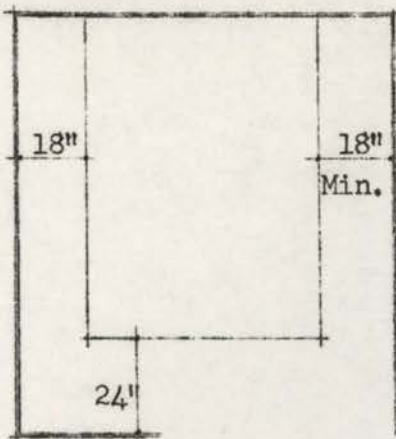
On the other hand, when built-in drawer chests are provided, the room should be credited with the space they occupy, as movable chests would occupy space in the basic room.

BEDROOM CLEARANCES AND SPACE REQUIREMENTS

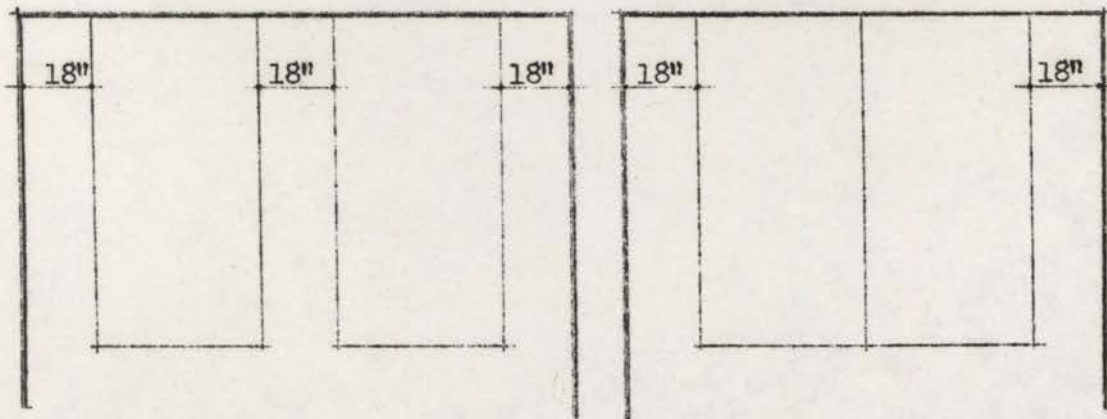
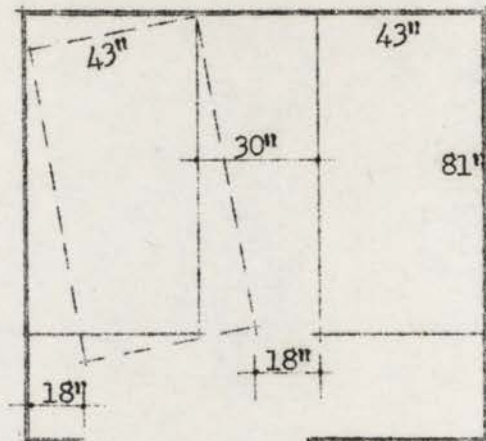
Single Bed



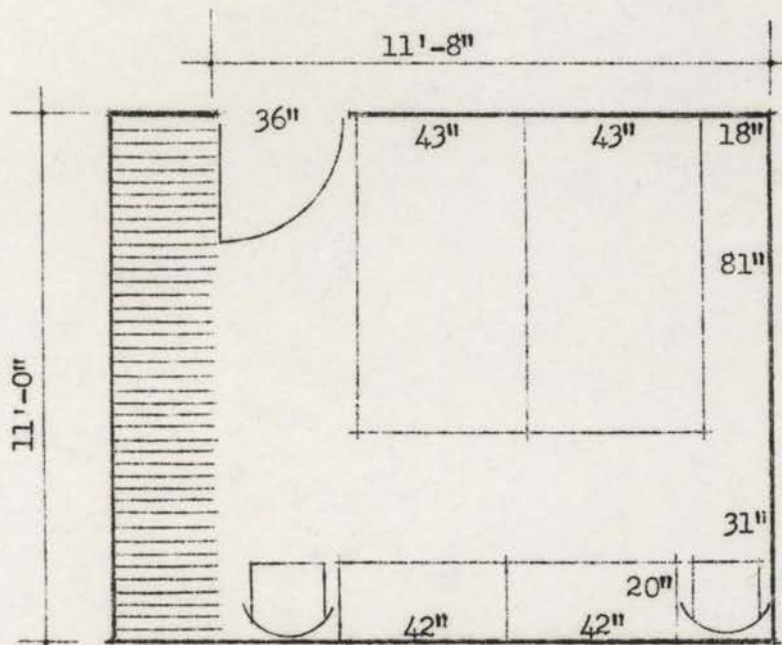
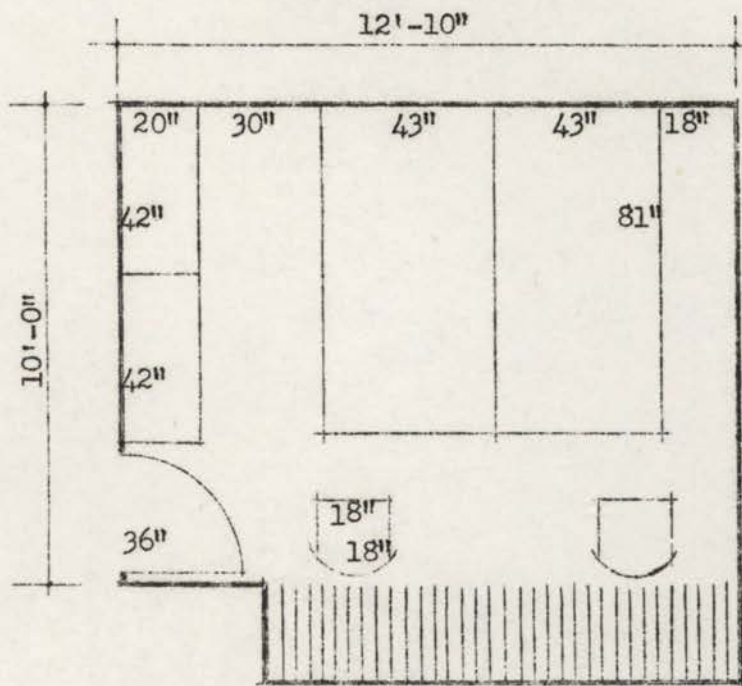
Double Bed



Twin Beds

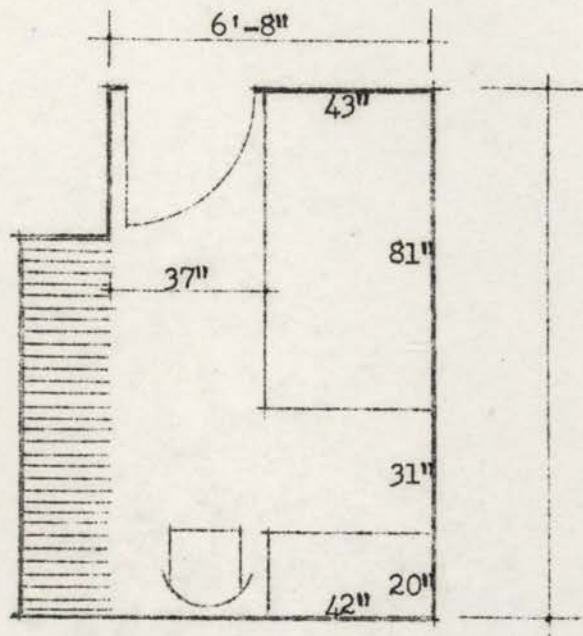


MINIMUM TWIN BEDROOMS

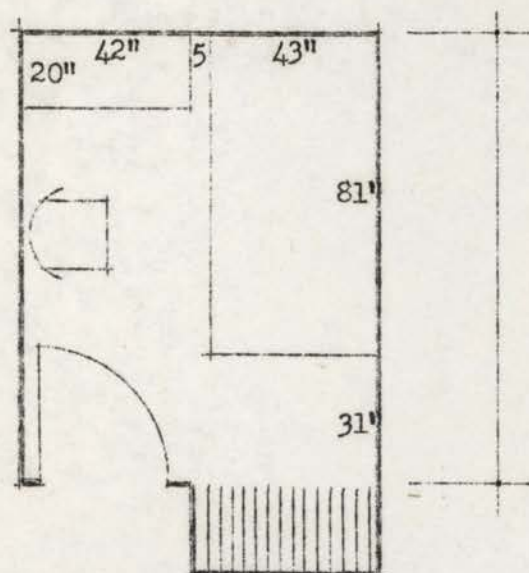


Minimum Bedrooms

Single



Area = 73.33 sq. ft.



Area = 70.0 sq. ft.

BEDROOMS

Deductions

The space required for sleeping and dressing is relatively small, but the bedrooms of the house may have to serve other activities, and, in this case, additional space will be required.

For families of the type used in these experiments (two children of opposite sex--one preschool and one in school), the house should have three bedrooms--one master bedroom and two single bedrooms. Based on the minimum room studies made previously, the area required for the master bedroom would be 120 square feet; for the single bedrooms, 70 square feet. The recommendation for two small bedrooms is not currently acceptable under some codes; however, the three-bedroom scheme is the one wanted by two of the three mothers, and the third planned on it at a later date. If a double bedroom is selected for the children, it should be as large as the master bedroom--120 square feet. A desirable feature in bedroom planning is a room sufficiently large to accommodate the bed in more than one position. Some persons object to the head of the bed resting against an outside wall; this factor should be borne in mind in designing bedrooms.

The bedroom storage facilities appeared to be adequate for the most part although there were occasional objections. Sometimes the storage chests were placed in the closets to give more space in the room. This resulted in reduced clothes-hanging space. Bedroom storage space was also used for toy storage in many instances. Apparently it is impossible to get too much storage space. It appears that all families continue to accumulate articles without discarding until the storage facilities are exhausted. Then the weeding-out process commences.

On the basis of the experiments, it seems in order to provide one closet, 2'-0" x 4'-0", for each person.

BEDROOMS
Recommendations

The following minimum sizes are for bedrooms designed for sleeping and dressing only.

Master Bedroom

Minimum dimension	10'-0"
Minimum area	120 square feet

Double Bedroom (for two children of opposite sex)

Minimum dimension	10'-0"
Minimum area	120 square feet

Single Bedroom

Minimum dimension	7'-6"
Preferred minimum dimension	8'-0"
Minimum area	70 square feet

Bedroom Clothes Storage

Minimum per person - one closet	2'-0" x 4'-0"
- one chest	1'-8" x 3'-6"*

Space occupied by built-in chests or drawers may be included in calculating the space in the room.

Space in "door alcoves" may not be counted as part of the required area.

(*) Or comparable size.

LAUNDRY AREA
Description of Facilities

General

The test dwelling was provided with an automatic washer and an automatic dryer. At the second family's request, outdoor drying lines were provided; this family did not use the dryer until the last month of the test program.

Equipment

Washer

29-1/4" wide, 25-1/2" fth, 35-1/2" high, top-loading, requires approximately 4" pipe space behind.

Dryer

29-1/4" wide, 25-1/2" fth, 35" high, front-loading, requires approximately 4" duct space behind.

Arrangement

The laundry was placed in the kitchen, bathroom, hall, utility room and basement. Washer and dryer were set side-by-side except in the case of the laundry-bath in Plans C and F, where they were placed opposite one another. In general, work or access space of four feet was provided in front of the equipment; exceptions were in Plan F where the space was only 2'-8", and Plan C where the space was 3'-4". In most cases, the access space overlapped passage space or other access space.

LAUNDRY AREA
Family Reactions

Plan

Family I

- 1-A-1 Wash clothes three days a week, three times each day. "We need a door between the kitchen and the bathroom" (comment on location of laundry in relation to place soiled clothes are stored). Would choose laundry in one end of the kitchen in this floor plan because of convenience, no stairs to go up and down. "I miss a place to hang things that I don't want to put in the dryer; I need a clothes rack in the laundry section." "I have to open two windows when the dryer is going."
- 1-B-2 Wash clothes four or five times a week. Laundry is located too close to the living room and dinette for guests, especially. Laundry is too close to the bedrooms. Noise from the washer makes it impossible to use it at night. Noise from the washer carries through the whole house because of its central location--can't isolate the noise as we could last month. If I stack the clothes (sorting process) in front of girl's door (most convenient place), no one can go in or out. In addition, the stacked clothes can be seen as people enter the front door. Would prefer to have the laundry facilities located in a utility room or one end of the kitchen. This way there is too much dirt and lint in the central part of the house and it spreads all over the house. The lint is coming from the dryer; apparently the screen isn't working properly. It doesn't look good to have the laundry located centrally where everyone can see it; it should be more isolated. The noise would be less noticeable if the laundry was in one end of the kitchen or a separate utility room. The moisture from the washing process steams up the windows. Would prefer to dry hand laundry in a utility room. "I don't like the way the dryer dries sheets and other things--need a utility room in which to hang a few things."
- 1-C-3 The humidity is high in the bathroom. I don't like to make a workshop out of the bathroom. Lint from the dryer covers everything in the bathroom. When you want to take a shower, you either have to clear the dirty clothes or the lint out of the bathtub. Wash four times a week, two or three washers a day. Dry clothes in the dryer, but it shrinks socks and other things. Would prefer lines in the utility room or basement. Prefer to do hand laundry in the bathroom. "I have washing powder in the bathroom, and I can do a hand wash in the washing machine if I want to." "I don't like the idea of using the bathroom as a workshop, and having to clear the lint out of the bathtub before we bathe. It is more convenient to do the wash; less steps are involved. The noise from the washing process is confined, and the bathroom is designed to accommodate the moisture from the washing process."

- 1-D-4 Wash five times a week, one washer per day. "The laundry could be in the kitchen, I don't like the laundry in the basement--too many steps." Dry clothes in the dryer and in the bathroom on a rack, but prefer rack in the basement. Do hand laundry in the washer and dry in bathroom--would rather dry in basement on a rack. Going up and down stairs with clothes is a disadvantage of having the laundry in the basement. Advantages are that the noise is isolated; I could do the ironing there if it were warm and dry.
- 1-E-5 Wash four times per week, two washers per day. We dry socks and jeans on the bathroom towel-racks, others in the dryer. Do hand laundry in the washer, dipping the clothes to be washed while the regular wash is being done. The laundry equipment is too close to the back door.
- 1-F-6 The bathroom is too narrow for all of these activities. The washer is too close to the lavatory and there isn't enough space between the washer and the dryer. Having the laundry in the bathroom interferes with a person's privacy. It is annoying to have clothes hanging in the bathroom; a rack or lines over the bathtub would help. I don't like the combined bathroom-laundry; I wouldn't have it in my own home. Laundry interferes with other activities. It isn't large enough to serve as a work area, too. It looks bad to have things hung up all over the bathroom. Wash three or four times per week, one washer per day. Prefer to hang clothes on inside drying racks. Do hand laundry in the kitchen sink and in the bathroom--dip articles that are washed by hand into the washer. Must keep window closed and covered when bathroom is on street side. Keeps plumbing on front of house; hence, it is closer to the water main. Laundry in the bath is too crowded; it is better to have laundry in the kitchen. Lavatory in the bathroom is too small for doing hand laundry; kitchen sink is better. I need more space for drying clothes in the bathroom and lines either in the garage or outside.

Family II

- 2-F-1 Bathroom-laundry is very crowded when I sort clothes. Wash two or three times per week, one or two washers per day. I always dry my clothes outside; I'm afraid to use the dryer--it seems so complicated. I probably would use the dryer in the winter. I like to do the big items of hand laundry in the kitchen sink and the small ones in the bathroom sink. Dry hand laundry on outside lines. Bathroom-laundry doesn't afford enough privacy--we have to pull the curtains when we use the bathroom, but it is convenient.
- 2-E-2 Wash two times per week, two to three washers per day. I now have more space for sorting clothes. Would prefer to have laundry in the basement so as to give more room in the kitchen. Dry clothes outdoors. Do hand laundry in the kitchen sink; it would be best to do the hand laundry in the bathroom. Dry hand laundry in the

2-E-2 (con't)

kitchen and outside. Laundry arrangements are handier to the back door and also handier for doing other work in the kitchen; baking can be cared for while I am washing.

2-D-3

Wash two to three times per week, two to three washers a day. Dry clothes on outside lines. Do hand laundry in kitchen sink. Dry hand laundry on line in the bathroom--would rather dry them on line in kitchen. Having the laundry in the basement makes too much walking up and down stairs. It is unhandy in general, too, but it keeps the "muss" downstairs.

2-C-4

Can see into the bathroom from the front door if the bathroom door isn't closed. Wash two or three times per week, two to four washers per day. Wash dresses or large articles in the kitchen as it is easier to rinse them there; smaller articles can be done in the bathroom sink. Dry them on a line in the bathroom. Laundry arrangements in the bathroom are handy.

2-B-5

Like these arrangements better--handy to kitchen for soaking, close to the work center, out of sight but available.

2-G-6

Wash one or two times a week, two washers per day. Now that I've used the dryer I like it very much; in fact, we plan to buy one in a short time. Using it this month only made our light bill \$1.65 higher. A separate room for laundry is nice; handy to kitchen and bath; out of view of living room.

Family III

3-H-1

Wash two to three times per week, two washers per day. Would prefer to have the laundry located along the west wall of the bathroom. Very desirable to get the laundry facilities out of the kitchen. Too much traffic in the laundry area. Would like utilities more isolated from the kitchen; don't like washing machine in view of front door. Need more storage space for mops, cleaning supplies, and miscellaneous items. Drying clothes in the dryer is the only satisfactory way to dry clothes as far as I am concerned. Dry hand laundry in bathroom; would prefer not to do it there but do not do enough to matter. Could have racks in the utility room. Convenience of first-floor arrangement is good, but it should be more isolated than it is because of the noise. Storage is inadequate for dirty laundry and unironed laundry near the washer and dryer. The position of the washer and dryer should be reversed--door openings are located in such a way that it would be better. Laundry facilities of this type are not as great an advantage as I thought they would be.

3-I-2 Need more ventilation when the dryer is going; it is warm and humid in the bathroom, especially in warm weather. It is conveniently located, but I can't turn on the washing machine while girl takes her nap. When I am sorting clothes, girl often plays at the basin and splashes water and rearranges the piles of clothes. We need a draw curtain in front of the laundry. Boy especially dislikes it. None of our friends seem to feel that they would like it. Wash four or five times per week, during this warm weather. Dry all clothes in the dryer, except the hand wash. I would use outside lines if I had them to keep from heating up the house with the dryer. These laundry arrangements are very convenient but the last arrangement was more accessible. I don't like this too well. It litters up the bathroom too much to sort clothes on the floor as I do and also to sort clothes after they have been dried in the dryer.

3-J-3 Wash three to four times per week, one or two washers per day. Laundry tubs are desirable as "I often want to soak spots out before I wash". Best arrangement we've had. Need more storage space for both washed and unwashed clothes--need shelves above washer and dryer. Very conveniently located, and the traffic doesn't interfere at all as it did in the first plan. When we build a new house, we will put the laundry in the basement; I may find it hard to go back to going up and down stairs, though.

TABLE 46 -- RATING OF LAUNDRY FACILITIES
Ranked in order from most adequate to least adequate (1 to 6)

Plan	Location of Equipment	Overall	Convenience				Appearance		
		Rating	Fam.	Fam.	Fam.	Fam.	Fam.	Fam.	Fam.
		<u>I</u>	<u>I</u>	<u>II</u>	<u>III</u>	<u>I</u>	<u>II</u>	<u>III</u>	
1-A-1	Kitchen	2	5			2			
1-B-2	Bedroom	5	3			6			
2-B-5	Hall*			2			2		
1-C-3	Bathroom	3	1			4			
2-C-4	Bathroom			4			5		
1-D-4	Basement	6	6			1			
2-D-3	Basement			6			3		
1-E-5	Kitchen	1	4			3			
2-E-2	Kitchen			3			6		
1-F-6**	Bathroom	4	2			5			
2-F-1	Bathroom			4			4		
2-G-6**	Utility Room			1			1		
3-H-1	Utility Room				2				2
3-I-2	Bathroom				3				3
3-J-3**	Kitchen Hall				1				1

(*) Position of equipment varied between 1-B-2 and 2-B-5. In Plan 1-B-2, the equipment was visible from the living room. See plans.

(**) Family's own plan.

LAUNDRY AREA

Analysis and Deductions

Presumably the automatic laundry equipment was the cause for the frequency of washing done by the families. "Monday-wash day" did not exist; instead the families washed from two to five days a week—one or two loads a day. This new pattern changes the location of the space demanded for the laundry equipment.

There appeared to be considerable indecision as to the most appropriate location for the laundry. Throughout the tests the mother was forced to choose between the desire for convenience and the desire for good appearance. The basement rates low in convenience, but rates high in appearance. (The washer is out of sight and hearing.)

Family I rates the unorthodox laundry-bath as the most convenient; Family II chooses a utility-room location. Family III selected the kitchen-hall location as best. (Family I did not have an opportunity to use a utility-room location; Family III did not have a chance to use the basement.)

Early choices indicated that the families thought the basement was a good place for the laundry. After using such an arrangement, it was rated least convenient by Family I and Family II.

There seemed to be a desire to eliminate the laundry from the kitchen. Family I, after trying the bath-laundry twice, finally chose a kitchen arrangement, but this appeared to be a compromise as other arrangements rated higher either in convenience or in appearance. Actually, in the arrangement chosen by Family I, the laundry was separated from the kitchen by the passage to the rear door. Families II and III selected laundry facilities away from the kitchen.

The bath-laundry was rated high in convenience by Family I, average by Family II, last by Family III. Since Family II was carrying clothes out-of-doors for drying, the arrangement was undoubtedly awkward. The appearance of the room was rated low by all families.

It is likely that the appearance factor, inadequate space in Plan F, plus the problem of moisture, helped to rule against this arrangement. In general, the acceptance of this laundry arrangement will depend upon its appearance and thus upon the design of the bath-laundry room. Adequate venting of the dryer is essential; provisions for hanging hand-laundry are desirable. Consideration should be given to locating the room as near as possible to the service entrance to facilitate hanging clothes out-of-doors.

The advantages of the bath-laundry are: (1) location near source of dirty clothing and linen, (2) location in room not heavily used in the middle of the morning, (3) location in room designed for heavy moisture concentration, and (4) insulation of noise of equipment. Disadvantages are: (1) location of room with respect to service entrances, (2) use of bathroom as workroom, and (3) automatic equipment required.

Another unorthodox laundry arrangement tested by Family I and Family II is the laundry in the bedroom hall as shown in Plan 1-B-2 and Plan 2-B-5. Family III also tried a variation of this design in Plan 3-J-3, where the laundry equipment was in a hall space between the kitchen and the bathroom-bedroom area.

The laundry equipment in Plan 1-B-2 was placed so that it was visible from the living room. Family I rated this arrangement last in appearance and third in convenience. In Plan 2-B-5, the position of the equipment was varied so that it was not visible. Family II rated this arrangement second on both appearance and convenience. The laundry-in-the-hall arrangement of Plan 3-J-3 was rated first on both counts by Family III. It would appear that this type of arrangement may satisfy the need for improved location of the laundry equipment in the modern small house.

LAUNDRY AREA
Recommendations

These recommendations are based on the assumption that automatic washing and drying equipment is available.

Space for equipment, minimum - 6'-0" wide x 2'-6" front-to-back
Access in front of equipment, minimum - 3'-0"
Access in front of equipment, preferred 3'-4"

(Access space may overlap with passage or with other access space.)

Suitable Locations

Basement
Bathroom
Hall - screen with folding partition
Kitchen - separated from other work areas of the kitchen
Utility Room

Indoor drying-racks or other facilities are recommended.

CHILDREN'S PLAY AREA
Description of Facilities

General

In most plans, no particular effort was made to provide for a children's play area. The exceptions were Plan C, which had an area in the kitchen intended for children's play, and Plan E, which had a playroom area of 73.67 square feet adjacent to the living room. Basic dimensions of this area were 8'-0" x 9'-10".

Equipment

Toy shelves

2 units, 30" wide, 30-1/4" high, 11-1/4" fth, 3 shelves.

Bookcase (or divider cabinet)

48" wide, 12" fth, 84" high, with two pairs of sliding doors and four open shelves. (This unit used in only one bedroom.)

CHILDREN'S PLAY AREA
Family Reactions

Plan

Family I

- 1-A-1 The boy usually played in the children's bedroom; the girl all over the house near the mother. Mother would like a special playroom for the children.
- 1-B-2 The boy played in the living room, his bedroom, and all over the house; the girl played in her own bedroom and all over the house. The mother stated, "At times I prefer that the children play in their own rooms, especially when they quarrel." She would like to be able to provide a special playroom all their own and would like it to be where they could be as noisy and careless as they wished. She said, "I want a playroom either on the ground floor or in the basement."
- 1-C-3 The boy played in the children's bedroom; the girl, all over the house but usually near her mother. The mother preferred that the children play in the children's bedroom; she did not like the play-space arrangement in the kitchen. She said "I don't like to have the toys in the kitchen and the children played just as well in the bedrooms as they did in the kitchen the few times I allowed them to play there." She much preferred to use the west end of the kitchen for eating and work. She commented that she would like to have a separate room in which the children could play.
- 1-D-4 The boy usually played in the living room as did the girl, but the girl also played in the boy's bedroom with him. The mother still preferred to have the children play in their own bedrooms. When the mother was working in the basement, the boy was usually away at school but the girl followed her mother to the basement. In this plan, the children's bedrooms were separated with a sliding partition. The mother said, "The children played in their rooms in all the other plans but not in this one. It may be due to lack of light in their bedrooms, too. In order to turn on the light in either of their bedrooms, they have to go into the dark bedroom. The boy is afraid of the dark. In addition, the hall is darker in this plan."
- 1-E-5 The children usually played in the playroom. The mother said she liked to have the children play in the playroom or preferably in their own bedrooms in some instances. While the mother was in the kitchen, this pattern varied somewhat as the little girl liked to be in the kitchen with her mother. Mother commented that they preferred to play in the playroom in preference to their own bedroom since it is near the living room. When questioned, she said

1-E-5 (con't)

perhaps it would be more convenient for them to entertain their friends but so far they haven't done so. The folding wall was considered inadequate from the standpoint of noise insulation. If the children were engaged in rough play, it was not possible to hear the radio in the living room even if the wall was closed. Removing toys from the bedroom helped give more closet space since before part of the closet space was used for toys. Playroom also had the advantage that it enlarged the living room and could be used as a guest bedroom. The boy said, "I like the play space better in this plan than any of the others." The girl said, "I like this playroom better than any of the others; I like to play near the kitchen."

- 1-F-6 The boy usually played in his own bedroom. The little girl followed her mother if her brother was not home. The mother preferred for them to play in their own bedrooms.

Family II

- 2-F-1 The children played out-of-doors a great deal, but when inside used their own bedrooms or the living room. The mother had no preference as to where they played. She said, "They have always played all over the house." She liked having the children's bedrooms separated by a folding wall.
- 2-E-2 The boy usually played in the playroom; the girl played in the living room, kitchen, or in the playroom if the boy was not at home. The mother didn't care where the boy played as long as he didn't play in the kitchen; she didn't worry about where the girl played. She said, "I don't like the playroom off the living room." She also said, "It would be OK if the bedrooms were larger." As a disadvantage, she felt that the playroom was an extra room to clean. As an advantage, she stated that the toys could be in one spot and she could shut off the messy playroom with the folding wall. She said, however, that she would rather have the living room and playroom all as a living room and a folding wall between the children's bedrooms.
- 2-D-3 The boy usually played in his bedroom and in the hallway; the girl played in the living room and sometimes in her own bedroom. Mother preferred that the boy play as he did; she had no preference as to the girl's play.
- 2-C-4 The boy played in the living room and in the play end of the kitchen; the girl played in the end of the kitchen and at times in her own bedroom. The mother said she preferred that the children play in the play end of the kitchen depending upon what they were playing with. Mother would choose a playroom rather than an eating space in the kitchen and she would prefer to use the west end of the kitchen for child play.

2-B-5 The boy played in the living room; the girl usually played wherever her mother was. The mother said that it "doesn't matter" where they play. The mother said the girl liked to play in the living room because she liked the low windows.

2-G-6 The boy usually played in the dinette and quite a lot in his own bedroom. The girl played in the living room or dinette. The mother did not care where they played. She said, "The children use the boy's bedroom quite a lot since it is so close to the living room and kitchen." She liked the arrangement because they used his bedroom more than usual.

Family III

3-H-1 The children usually played in the living room; the mother said that she preferred that the children play in their bedrooms but that she was lenient about enforcing the rule. She disliked their playing in the living room because it was messy most of the day. She said, "I can't receive callers without notice before hand." She chose an eating space in the kitchen in preference to a playroom. She said she did not think the children would be better satisfied if they had a separate playroom. She commented, "A basement area is needed for a play space within the house where the children can be as noisy and careless as they want to be." She also said, "I prefer to have one of the children's bedrooms big enough to be used as a play area. The big problem is the living room; it is messed up most of the time."

3-I-2 The children played all over the house but much of the time in the kitchen and the living room. The mother stated that it had worked out well to have them play in the kitchen as they often do now. She said it was harder to work and keep the house clean with the children underfoot. She would like very much to have a playroom but wouldn't sacrifice either an eating space in the kitchen or a large living room to get the playroom. She thought the children would be better satisfied if they did have a separate playroom. She suggested a bedroom adjacent to the kitchen; suggested that a folding wall would be nice at that point.

3-J-3 The boy played mostly in his own bedroom, some in the hallway and in the living room; and the girl played in her own room. The mother preferred to have them play in their own rooms; however, she felt that the children wanted to play wherever the parents were. She said she felt the children would be better satisfied if they had a separate playroom but "we can't afford the space if we build". She suggested a play area in the basement.

TABLE 47 -- RATING OF CHILDREN'S PLAY FACILITIES
 Ranked in order from most adequate to least adequate (1 to 6)

<u>Plan</u>	<u>Family I</u>	<u>Family II</u>	<u>Family III</u>
1-A-1	4		
1-B-2	3		
2-B-5		5	
1-C-3	6		
2-C-4		6	
1-D-4	2		
2-D-3		4	
1-E-5	5		
2-E-2		2	
1-F-6*	1		
2-F-1		3	
2-G-6*		1	
3-H-1			3
3-I-2			2
3-J-3*			1

(*) Family's own plan.

CHILDREN'S PLAY AREA

Analysis and Interpretation

The location of the children's play activities varied considerably from family to family and from plan to plan. The mother of Family I wanted her children to play in their bedrooms--this accounts for the higher ratings given Plans F, D, and B. The children's single bedroom of Plans A and C were considered too small for play. Plan E, with the play alcove off the living room rates low with the mother. The mother of Family I had mentioned the desirability of a playroom several times but she disliked play equipment visible from the living room; also, the accordion doors did not isolate the noise properly. She was also opposed to the reduction of the living-room area which was caused by the installation of the playroom. It should be realized that the type of playroom provided was not in line with the mother's idea of a playroom and that the playroom was not ideal. On the other hand, the children themselves liked the playroom arrangement very much. At the time of the interview, they considered it the best arrangement of the first five plans. (They had not as yet used Plan F.)

The mother of Family II did not care where her children played and as a result a greater portion of the play activity took place in the living room; however, the children of this family used the kitchen of Plan C very heavily and also used the playroom area of Plan E considerably. It is very interesting to note that the children played a minor amount in their bedrooms.

The mother of Family III wanted her children to play in their bedroom(s), but was lenient in enforcing the rule. The children played more in the bedroom of Plan J, probably because it was larger.

The mothers of both Family I and Family III objected to toys in the living room; both suggested the basement as an appropriate rumpus room; both expressed a desire for a playroom but did not want to sacrifice the space in other rooms in order to gain the playroom.

From the attitudes of these three families, it might be assumed that children play in their bedrooms not by choice but because they are encouraged to do so.

CHILDREN'S PLAY AREA Deductions

Younger children appear to want to play near their mother; appropriate play arrangements should be near the kitchen for supervision by the mother.

Families would like to isolate play activities from the living room in order to keep the living room as a reception room. A separate playroom is probably the best location for play space.

The amount of space needed for children's play was not specifically determined in these experiments. The single room of Plan F was voted best and had an area of only 82.43 square feet, but this room could be joined with the other small bedroom. The area of the boy's room in Plan G was 84.33 square feet; the area of the one bedroom for the children in Plan J was 117.24 square feet. These single-room areas are only slightly larger than the minimums recommended; the double room is actually less than the recommendation for a twin bedroom.

It is obvious that additional space is needed for play activities. The problem is--how much space? Trotter* has suggested a free play area 5' x 6' in dimension plus another 11 square feet for minimum equipment of 2' x 2' table, 1' x 1' chairs, 1' x 4' shelves, 1' x 2' shelves. This space and equipment (plus some additional equipment) may be combined with necessary bedroom equipment to give an 11' x 12' minimum bedroom, according to this study.

On the basis of this information, it would seem advisable to stipulate that a minimum of 40 square feet per child should be added somewhere in the house for play space.

(*) Virginia Yapp Trotter; "Space and Equipment Requirements for the Pre-school Child's Room in a Professional Family Home." Kansas State College, 1948.

CHILDREN'S PLAY AREA
Recommendations

Added space per child for children's play, minimum: 40 square feet

Free play area, per child, exclusive of traffic lanes: 5' x 6'

Suggested locations:

- Playroom
- Enlarged single bedrooms
- Enlarged utility room
- Multi-purpose room

Locate for easy supervision by mother if possible. Access to outdoors is a good feature.

AREAS FOR MISCELLANEOUS ACTIVITIES
Analysis, Deductions and Recommendations

Ironing

No specific place was designated for ironing. The ironing board and space to use it require an area approximately 4' x 6'. This area was usually found in parts of the house which were periodically unused.

Provisions should be made for the storage of the ironing board and the iron.

Sewing and Mending

In the test plans, no specific provisions were made for sewing and mending. The mother usually installed the sewing machine in a convenient place or, if the machine was portable, used it on one of the tables in the house. (See section on "FAMILY ACTIVITIES", "Sewing and Mending", page 22.)

Ideal arrangements would call for space for a cutting table, dress-form storage, material storage, etc., but minimum requirements should at least stipulate space for the storage of the sewing machine. Suitable locations are utility room, multi-purpose room, master bedroom, living room, and dining room.

STORAGE AREAS*

Bedroom Storage

See "BEDROOMS", page 131.

Coat Closet

The single coat closet 2'-10" wide was considered inadequate by all three families.

Recommendations: Minimum closet for coats, 3'-0" wide, 2'-0" fth.

Broom Closet

The 24" x 22" broom closet was considered adequate for most plans. This shape is not as successful for storing tank-type cleaners as is a wider closet with a smaller front-to-back dimension.

Recommendations: Minimum storage for cleaning equipment, 2'-0" x 2'-0" or 3'-0" wide x 1'-4" fth.

Closet may be omitted if equivalent open space is provided in first-floor utility room.

Linen Closet

The linen cabinet was used during the tests both for bathroom linens and for bedding and bed linens. Linen cabinets smaller than 2'-0" x 2'-0" usually brought complaints of inadequacy.

Recommendations: Minimum linen storage, 2'-0" x 2'-0", 6'-8" high or higher, six to nine shelves.

Bulk Storage

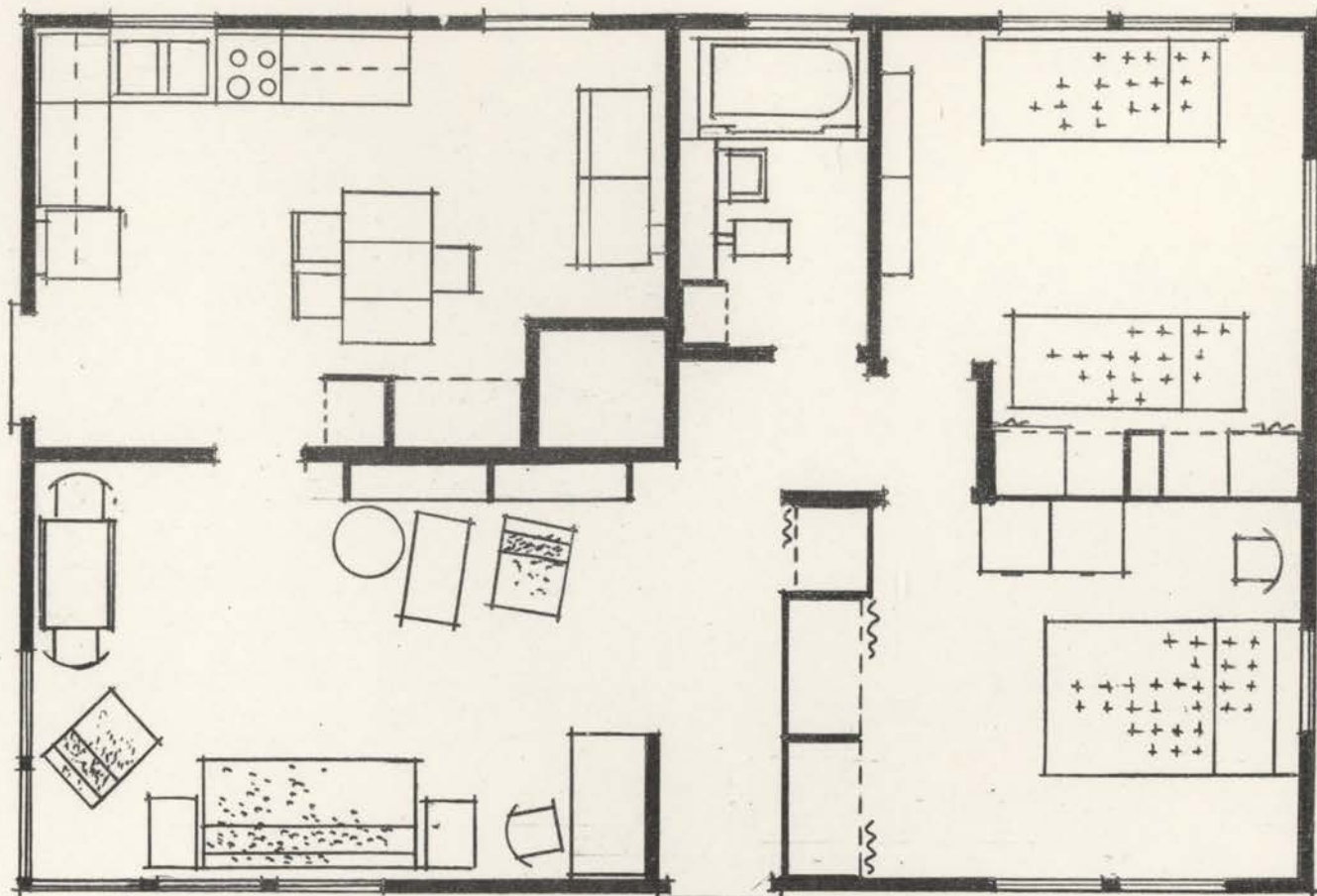
No attempt was made to evaluate the requirements for bulk storage as the families did not bring all of their possessions. Bicycles, tricycles, wagons, etc., were stored in the garage, as were other bulky seldom-used items. (One family stored overshoes in the garage.) Even when the basement was available, it was not used for storage except to a very minor degree. The garage seemed to be the preferred spot for all types of vehicles.

(*) For detailed analysis of the design of storage units, see McCullough, HOUSEHOLD STORAGE UNITS, Small Homes Council Circular C5.1, University of Illinois, Urbana, Illinois, 1953.

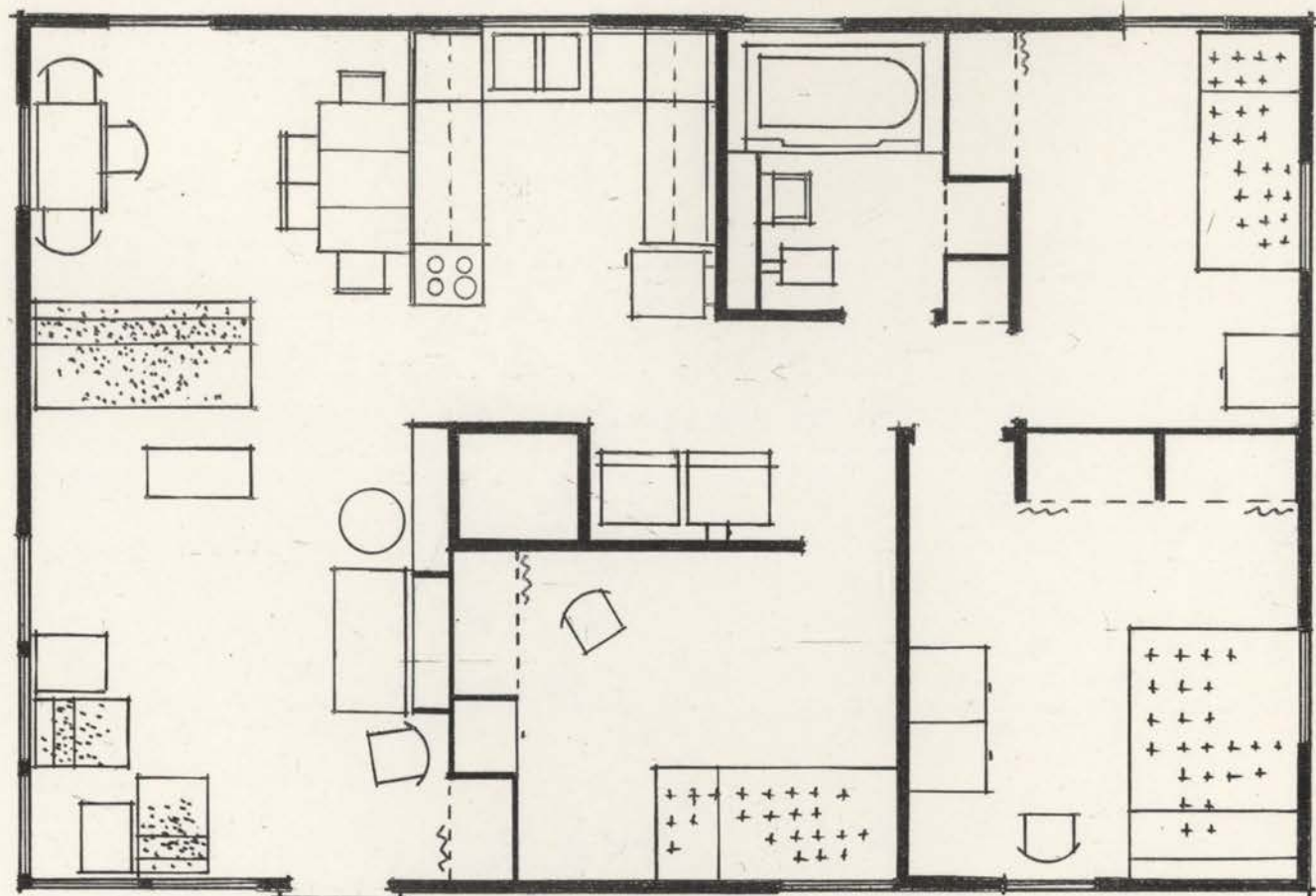
SUGGESTED PLAN CHANGES

The illustrations on the following pages show the suggested plan changes prepared by the families themselves after living in a given test plan. Some plan changes suggested are not in accordance with good architectural practice.

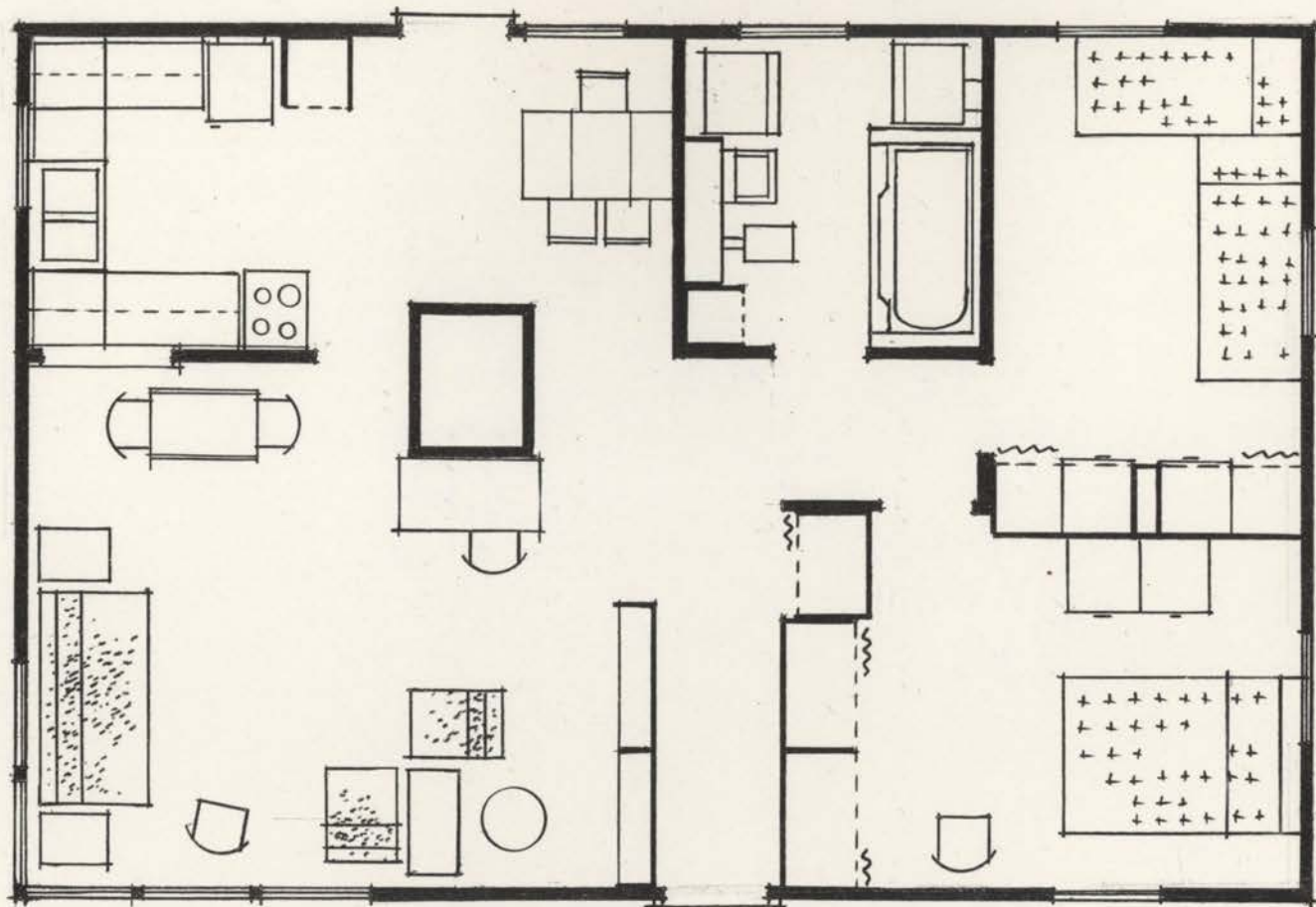
There are no plan changes for Plans 2-G-6, 3-I-2, and 3-J-3, as the families had none to suggest.



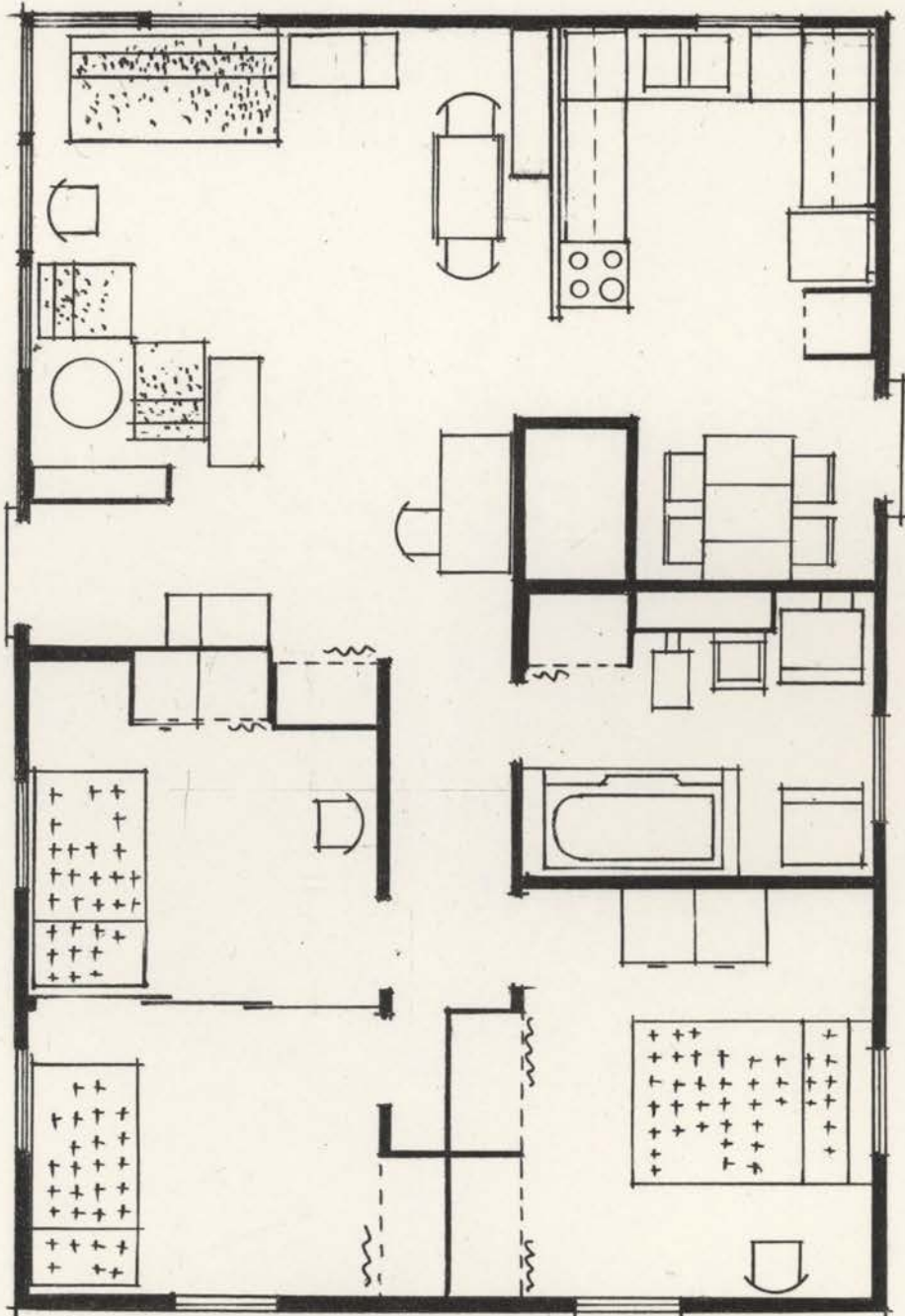
SUGGESTED PLAN CHANGES
for
1-A-1



SUGGESTED PLAN CHANGES
for
1-B-2



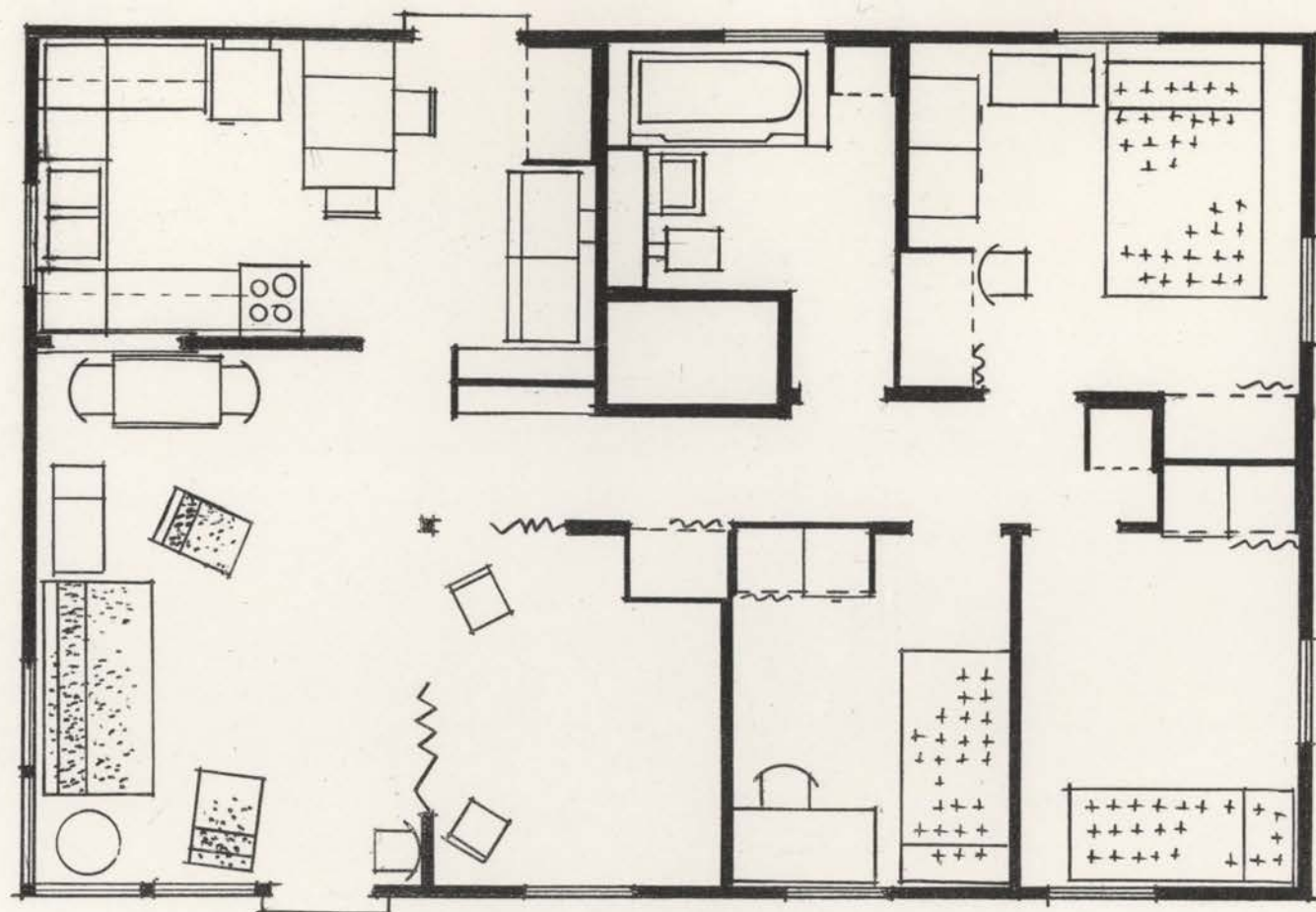
SUGGESTED PLAN CHANGES
for
1-C-3



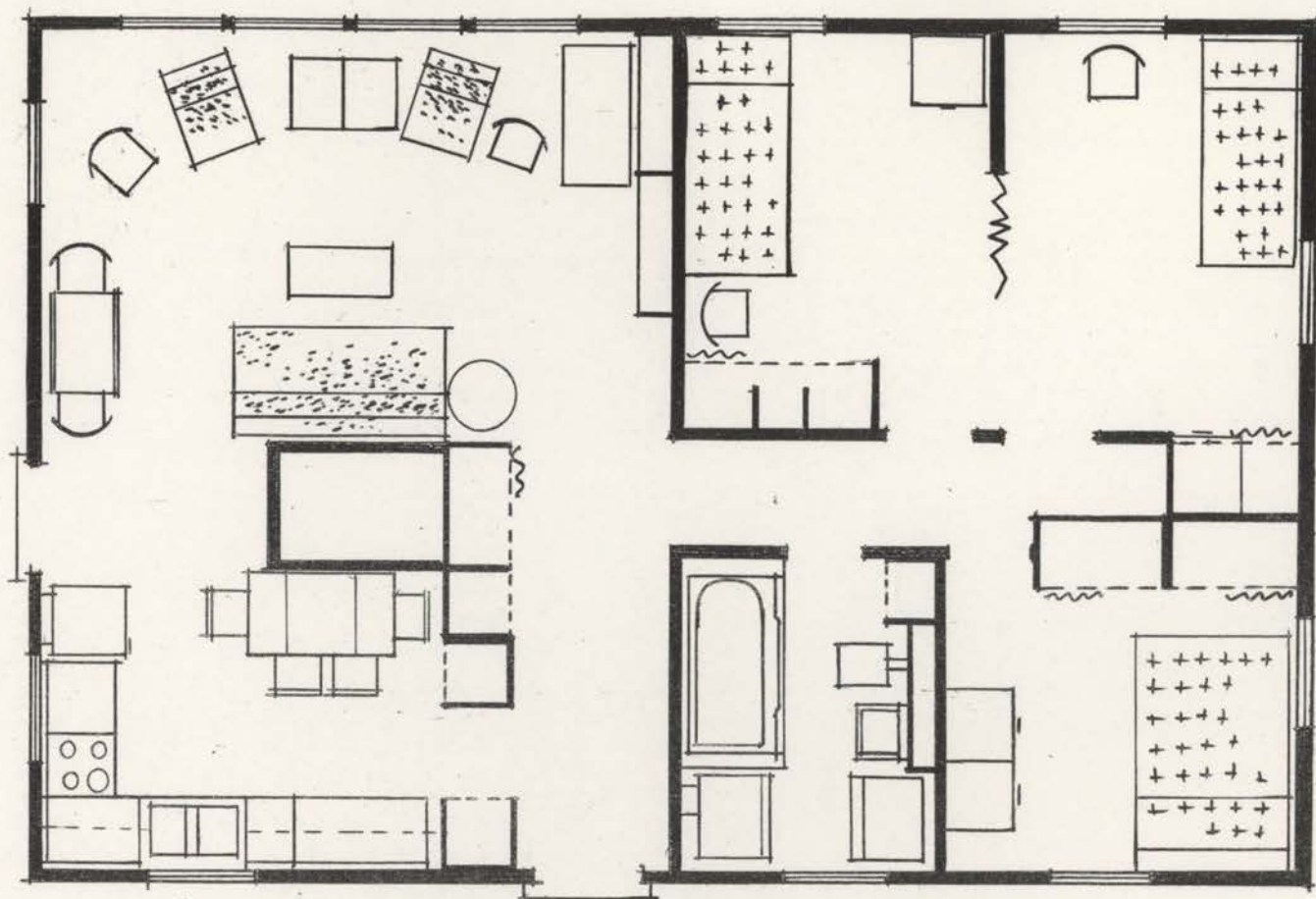
SUGGESTED PLAN CHANGES

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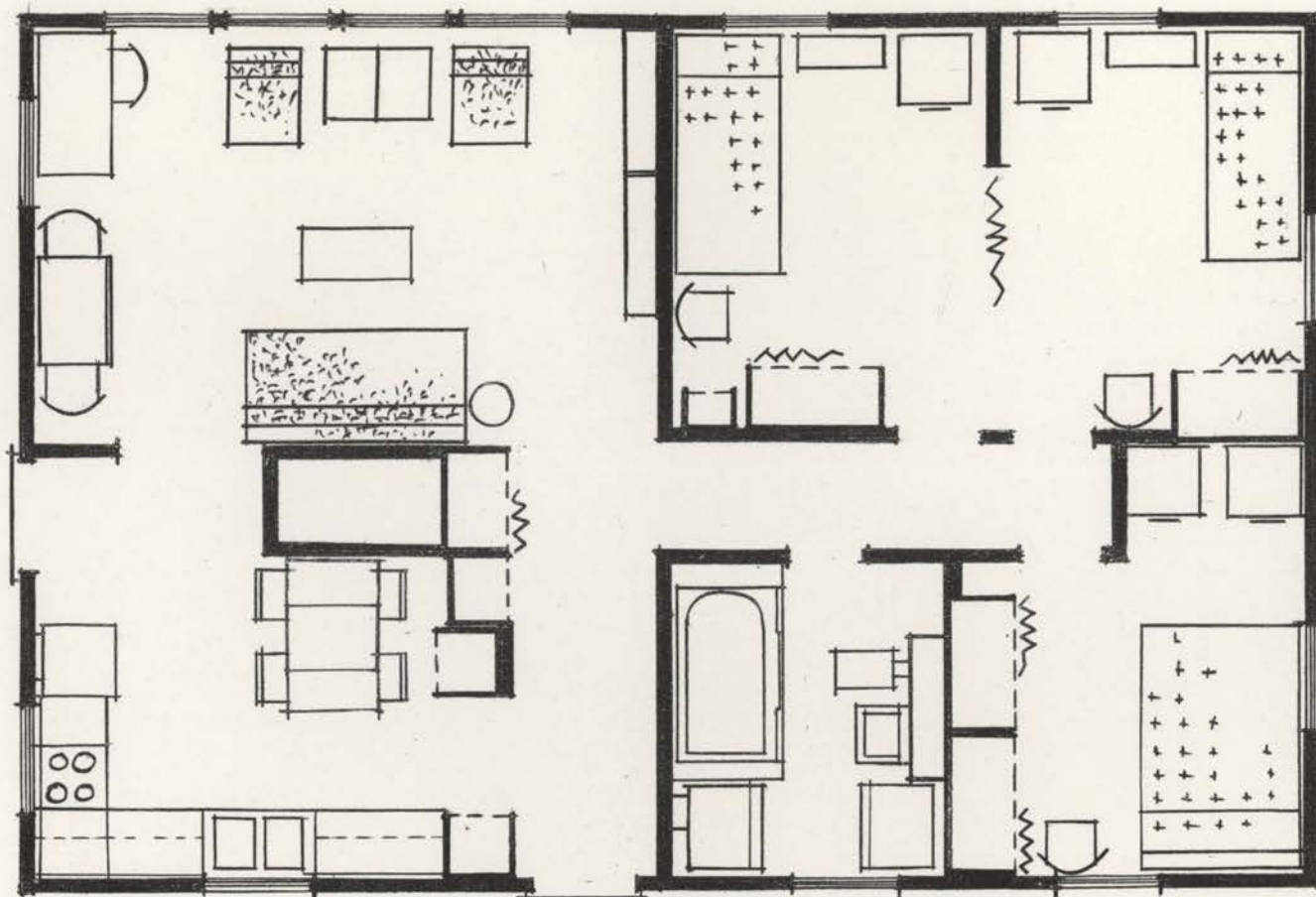
1-D-4



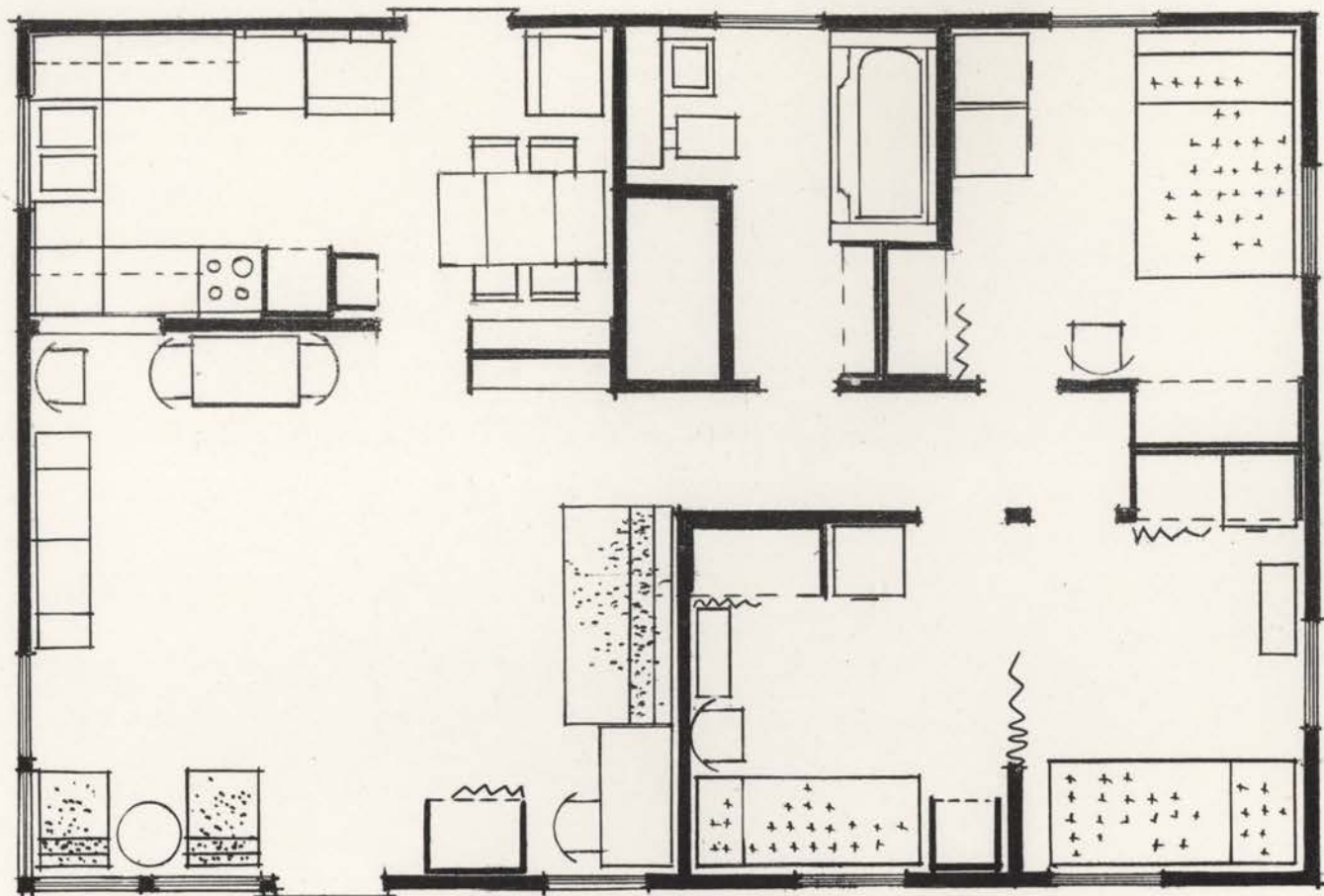
SUGGESTED PLAN CHANGES
for
1-E-5



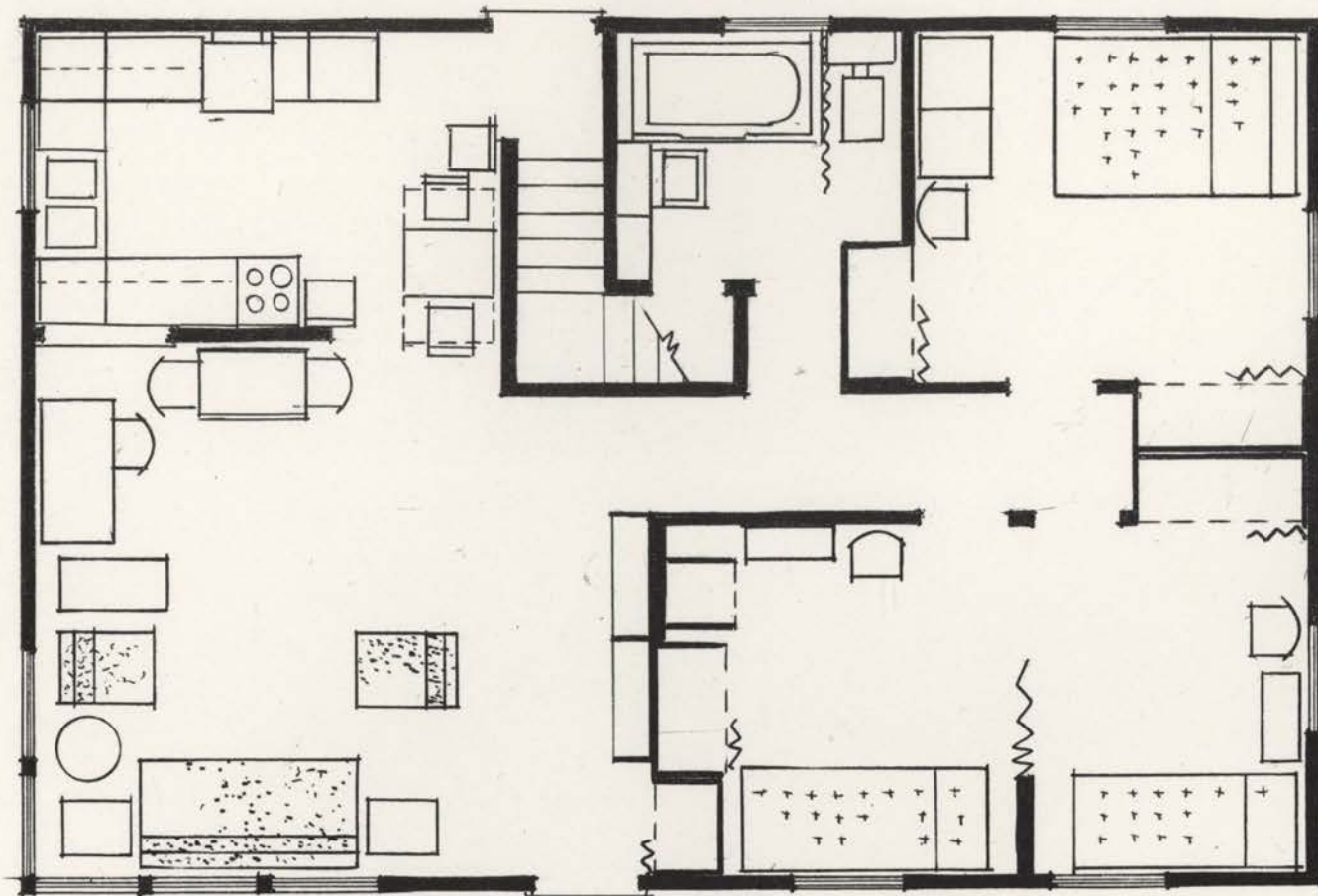
SUGGESTED PLAN CHANGES
for
1-F-6



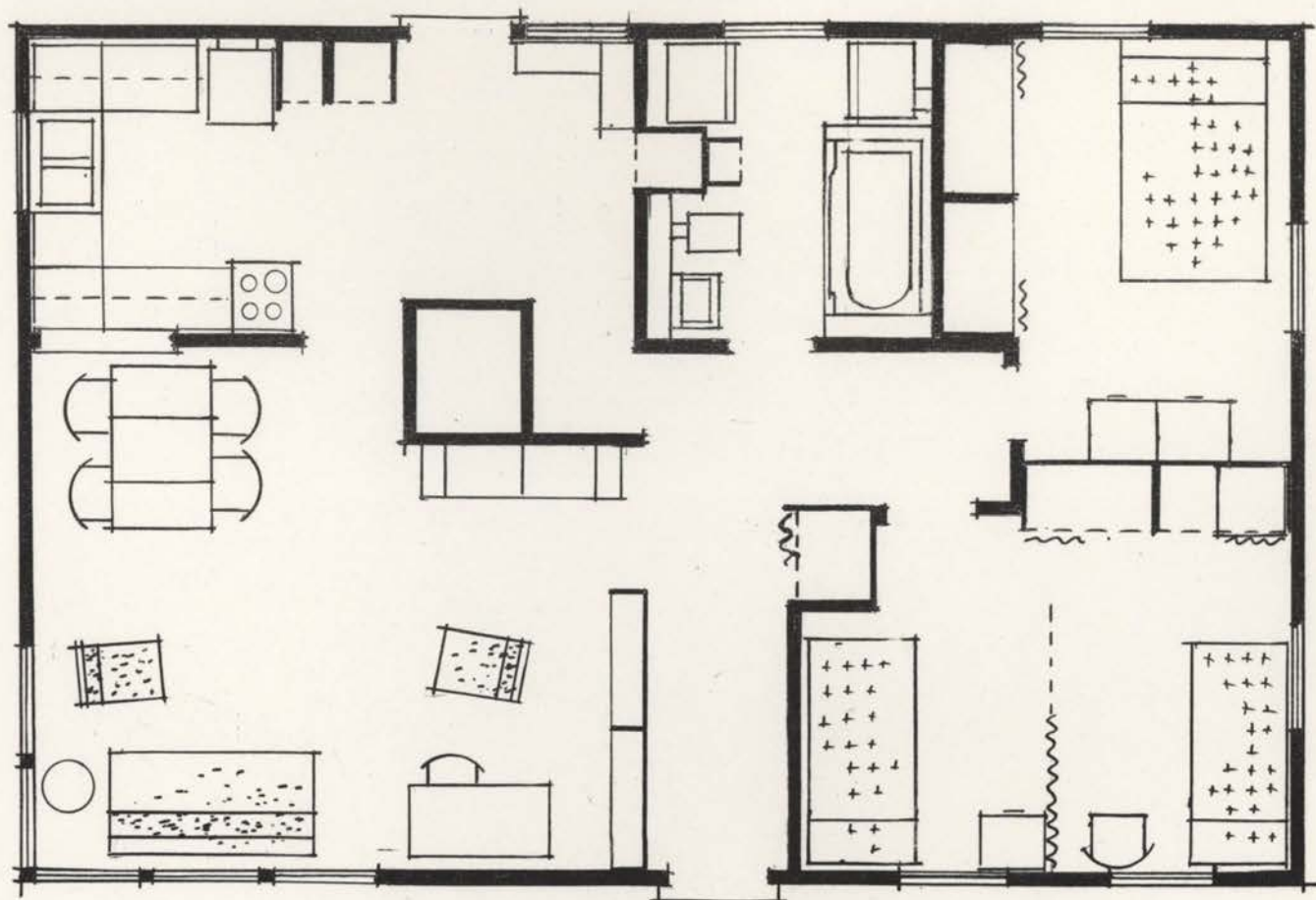
SUGGESTED PLAN CHANGES
for
2-F-1



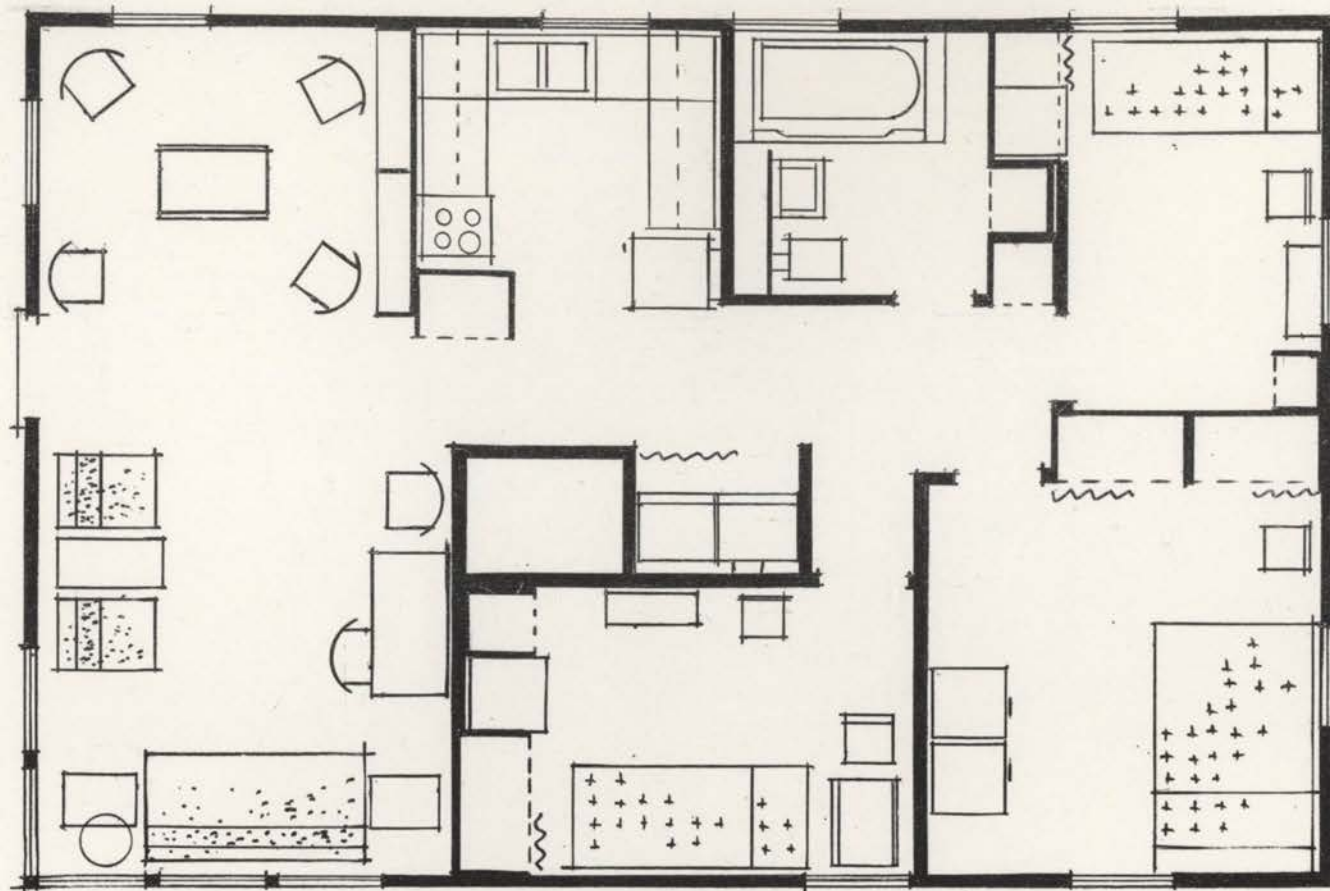
SUGGESTED PLAN CHANGES
for
2-E-2



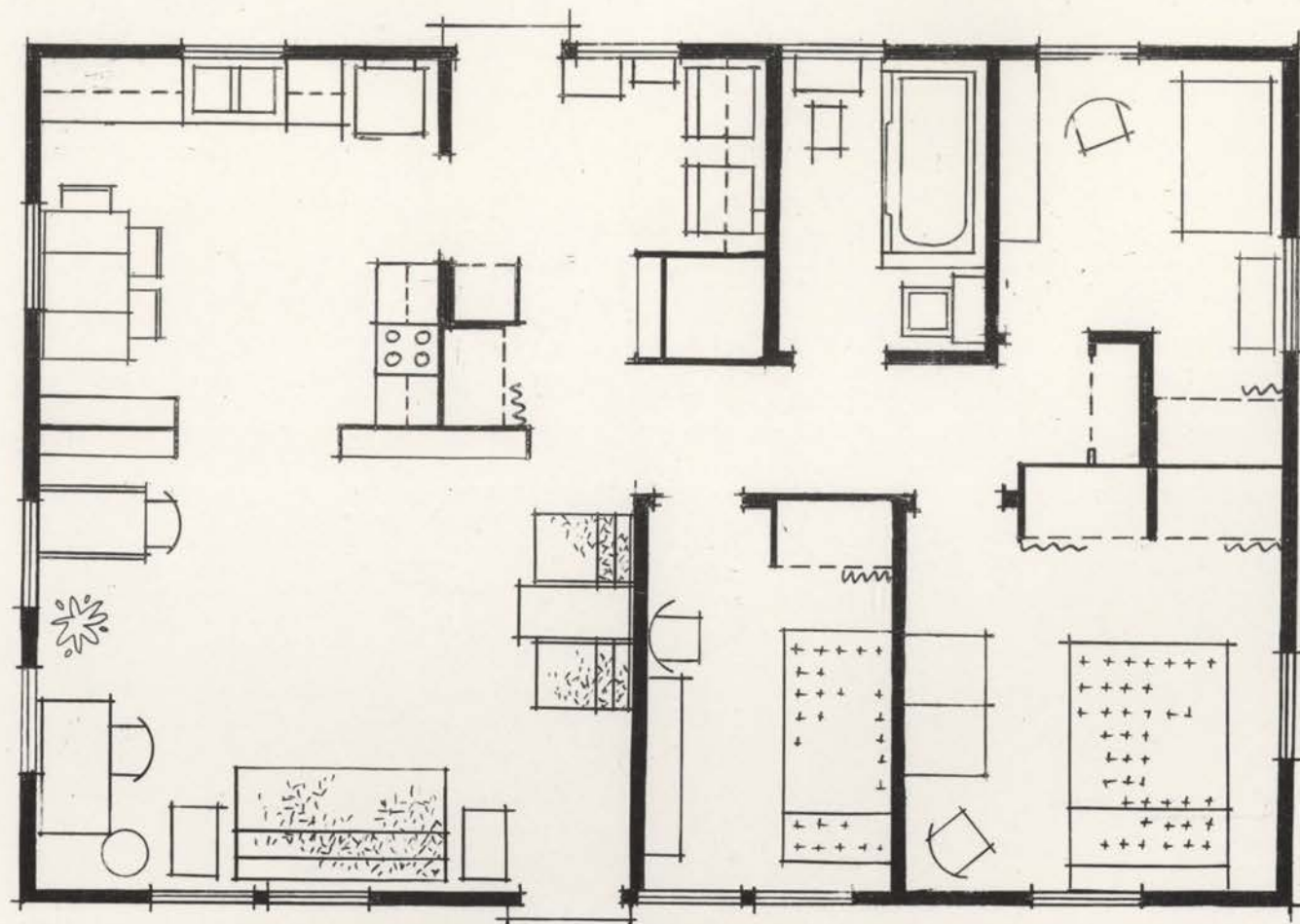
SUGGESTED PLAN CHANGES
for
2-D-3



SUGGESTED PLAN CHANGES
for
2-C-4



SUGGESTED PLAN CHANGES
for
2-B-5



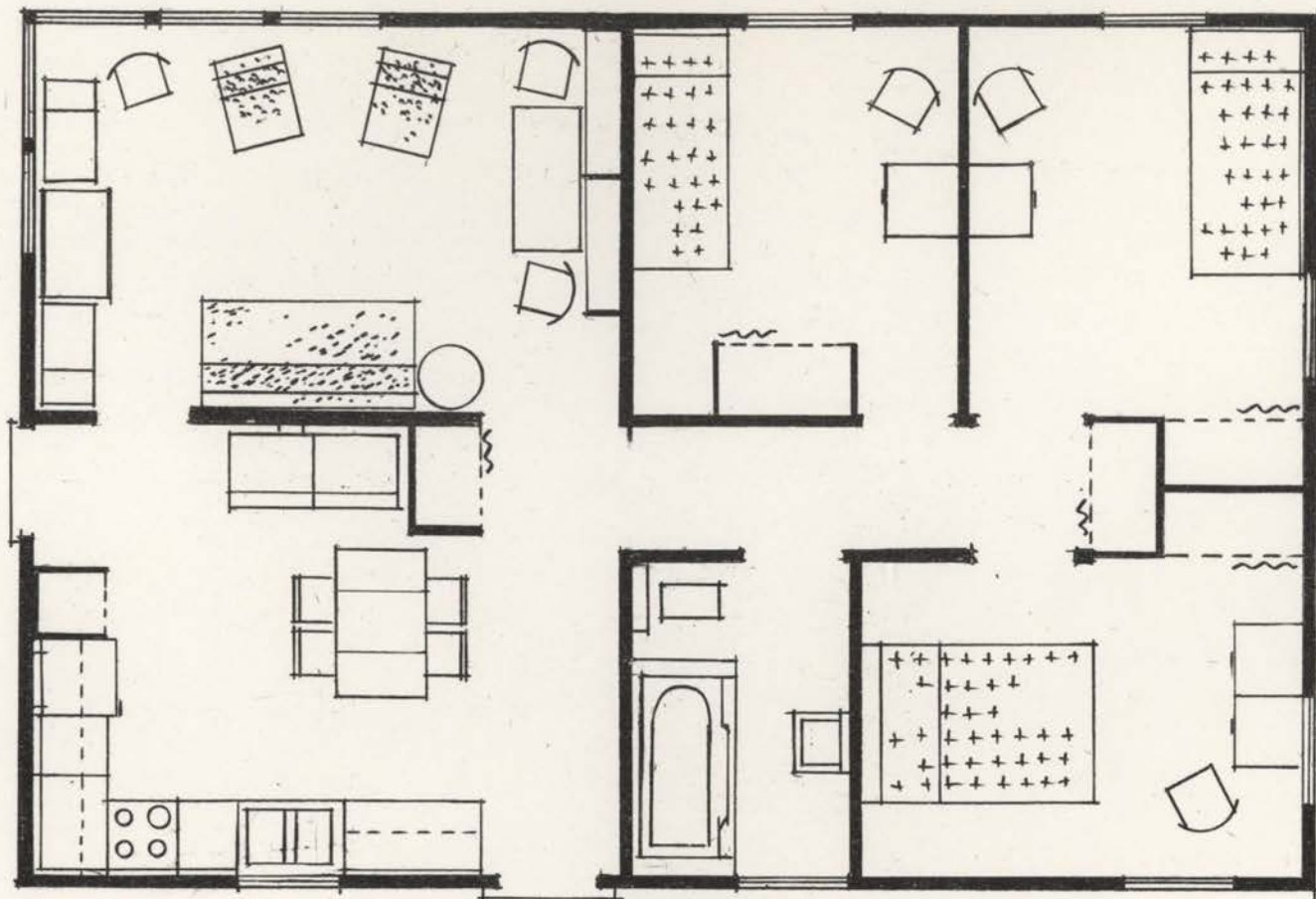
SUGGESTED PLAN CHANGES
for
3-H-1

DESIRED PLANS

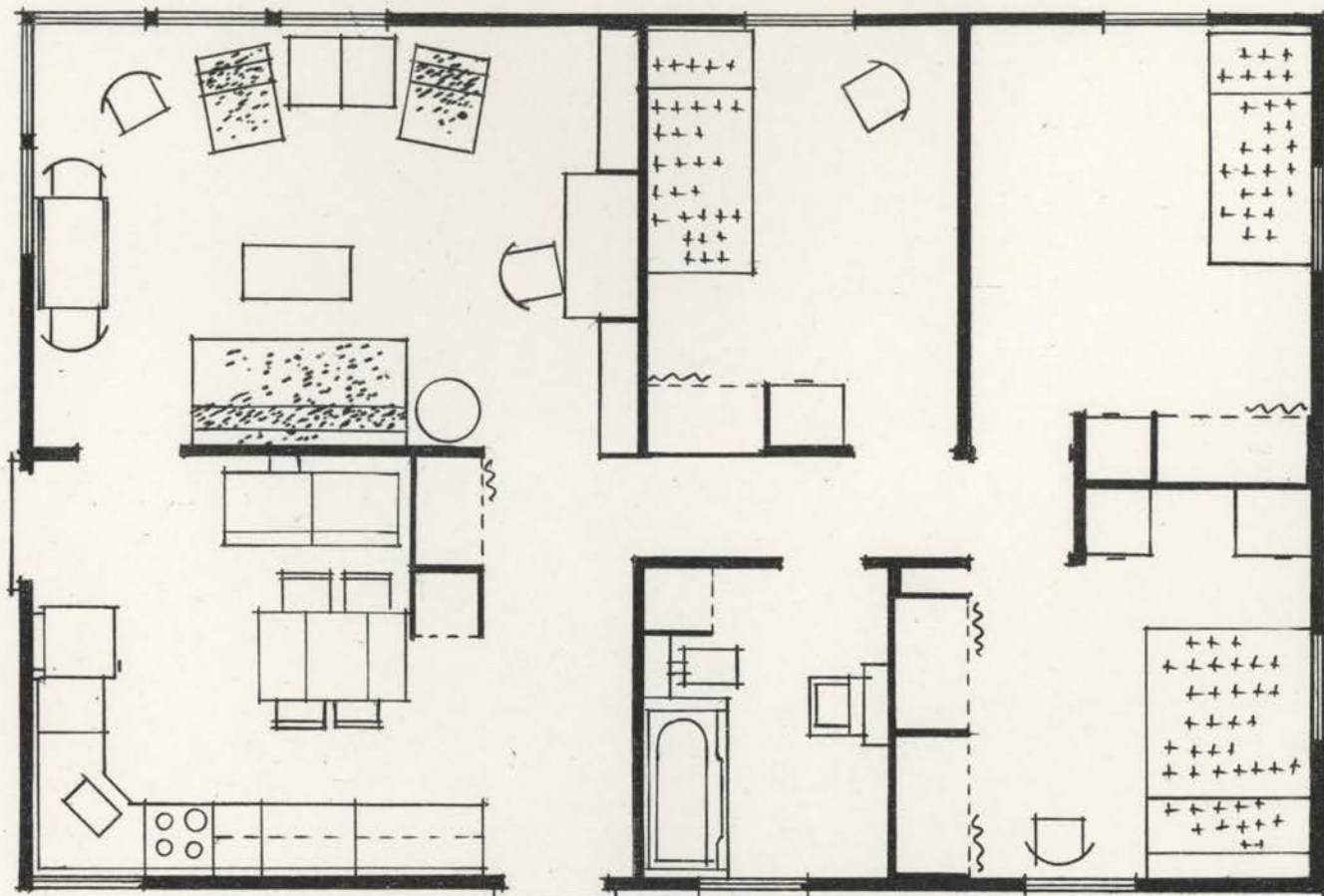
After each test plan, the families were given an opportunity to design a 24' x 36' house which they felt would be the most desirable arrangement for themselves. The final plan developed was used as the last plan tested in each family series.

The plan desired by Family II remained the same after 2-C-4; hence, Plan 2-B-5 is not included.

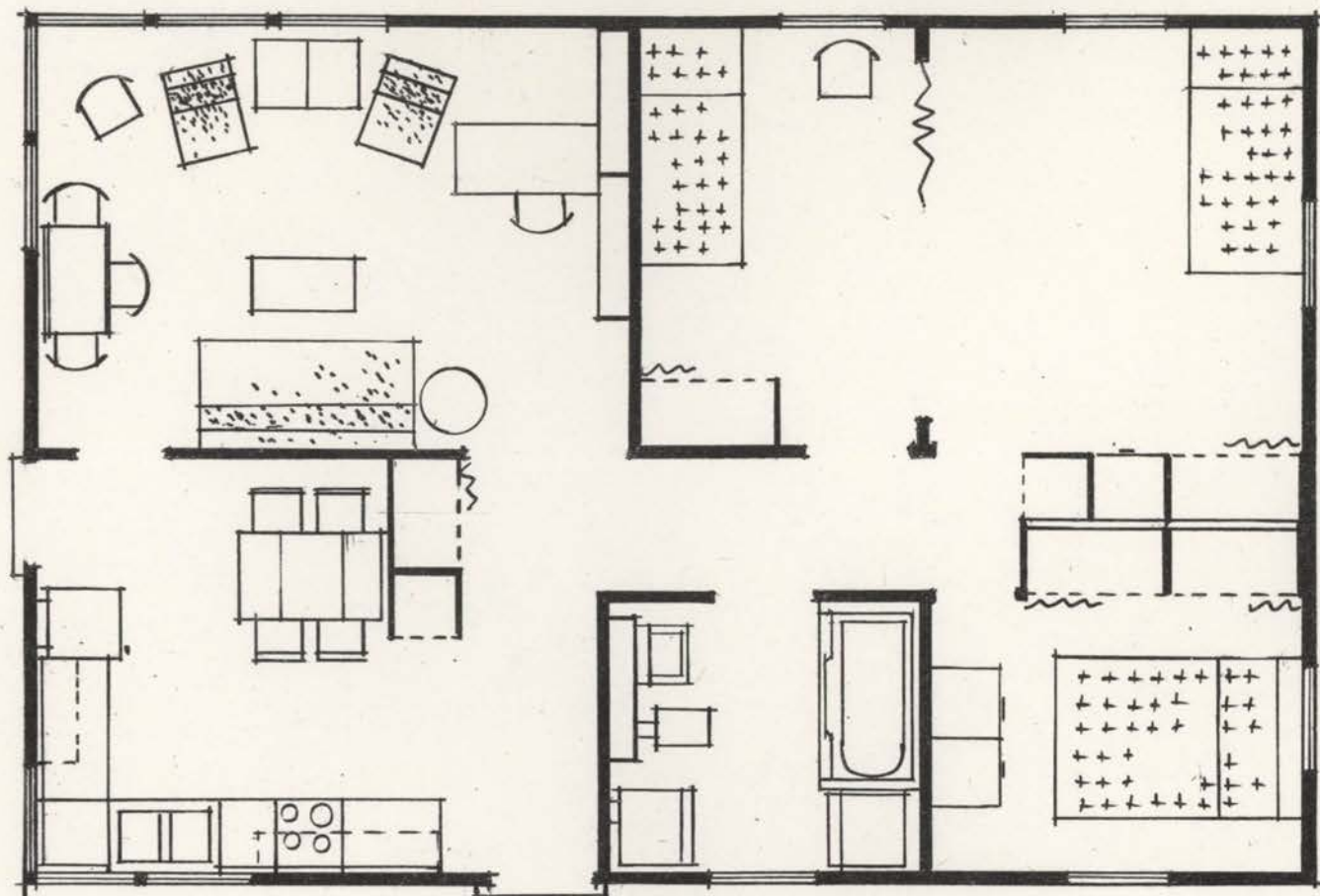
The plan desired by Family III after living in Plan 3-I-2 is actually Plan 3-J-3 shown on page 16.



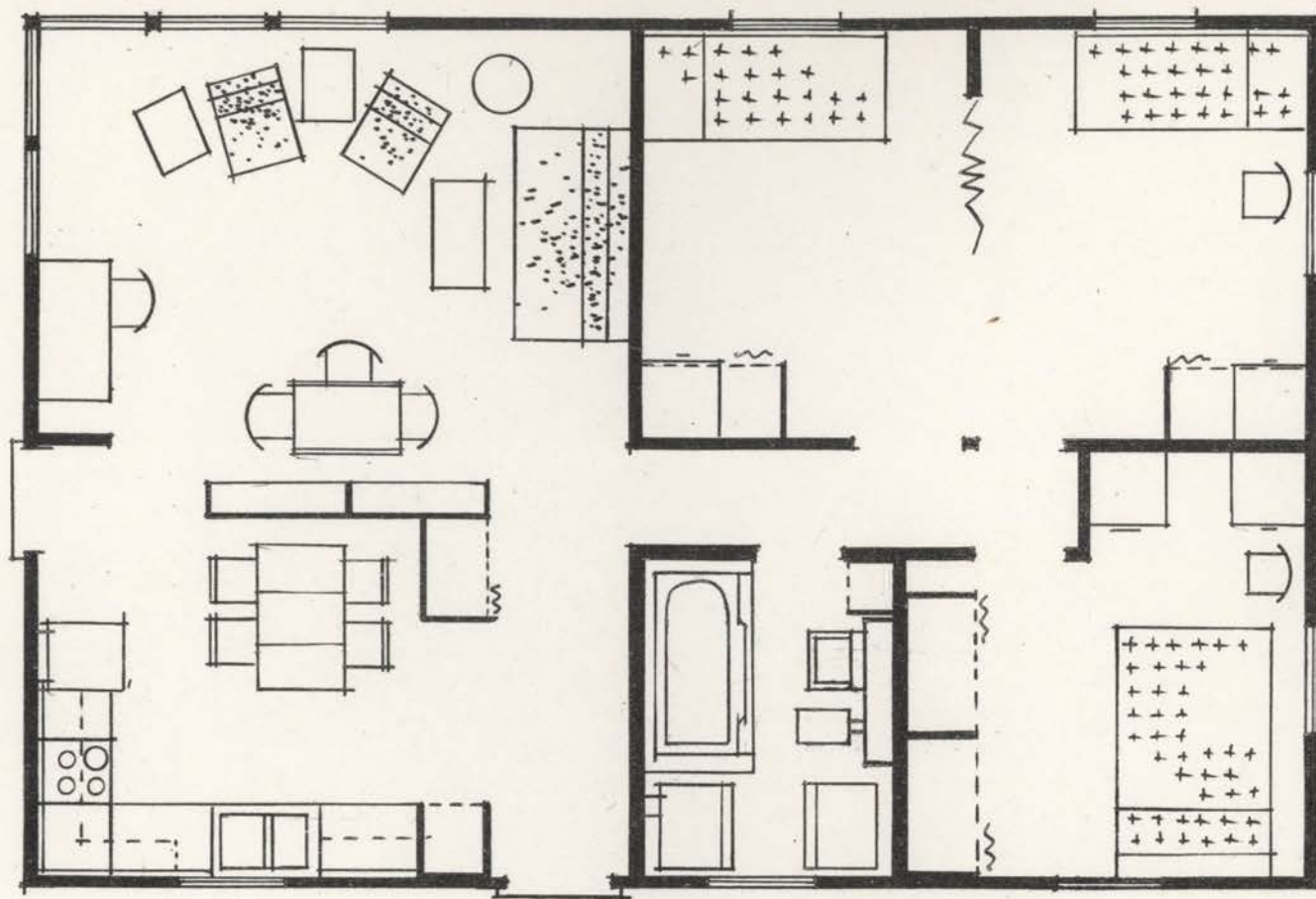
DESIRED PLAN
after living in
Plan 1-A-1



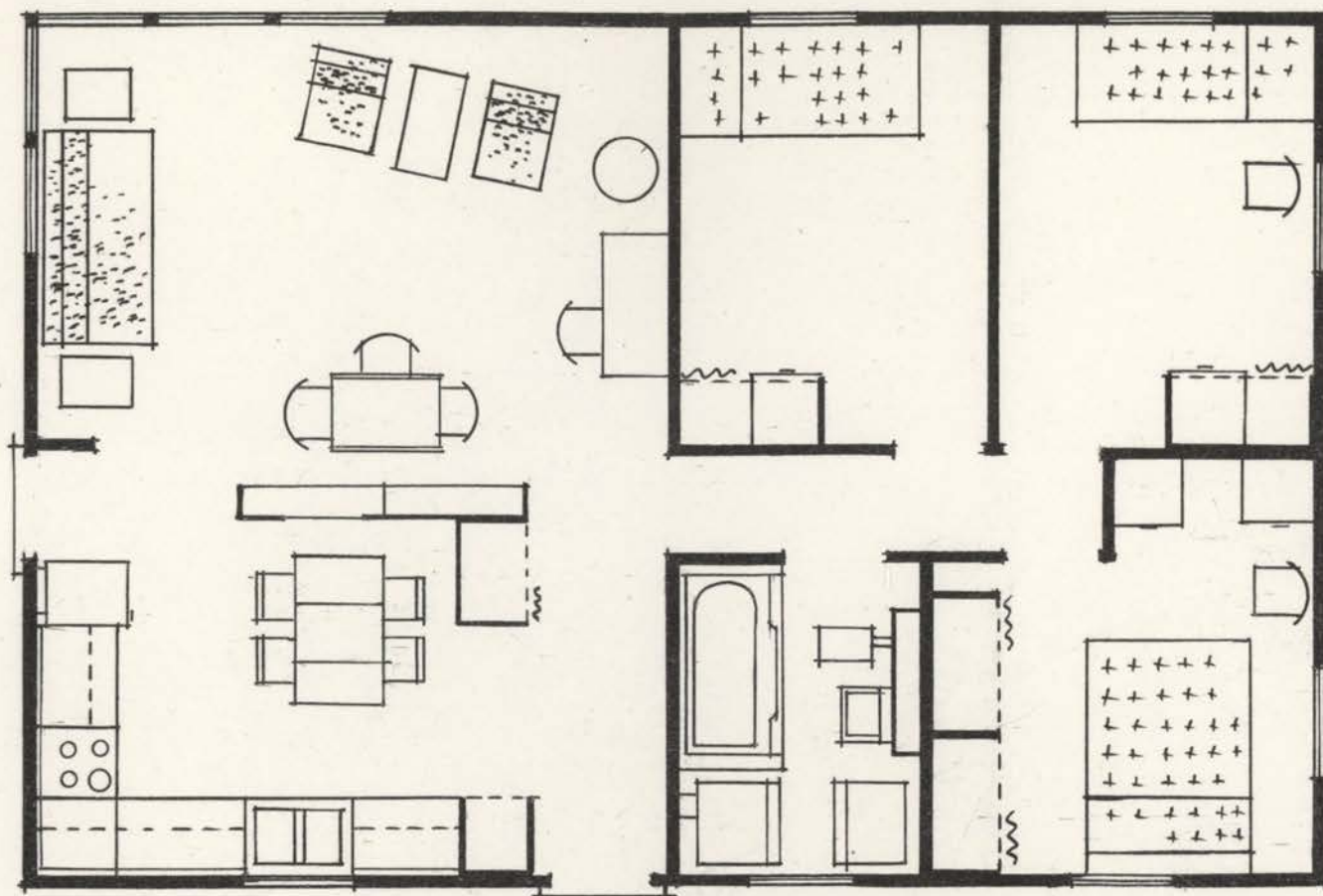
DESIRED PLAN
after living in
Plan 1-B-2



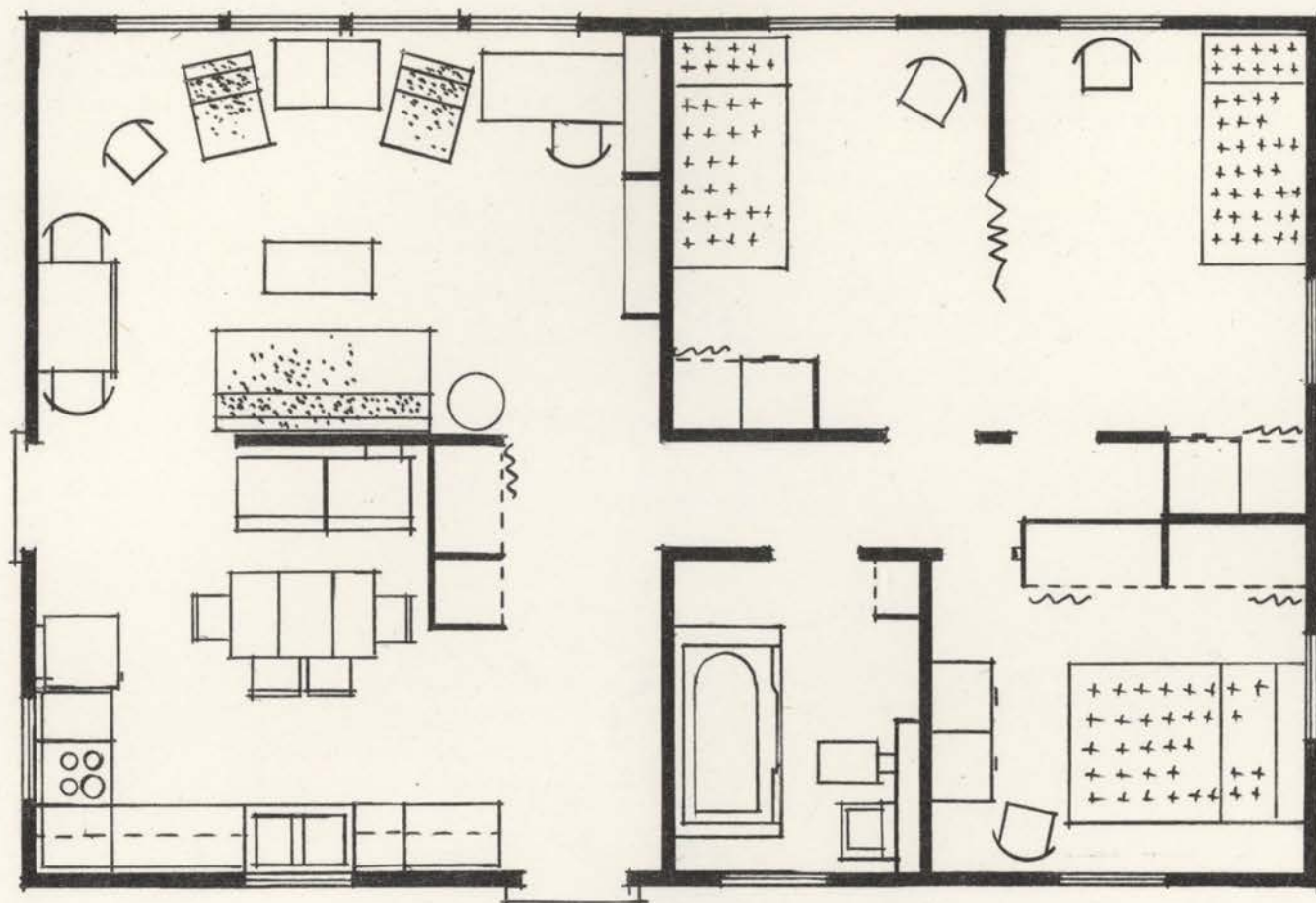
DESIRED PLAN
after living in
Plan 1-C-3



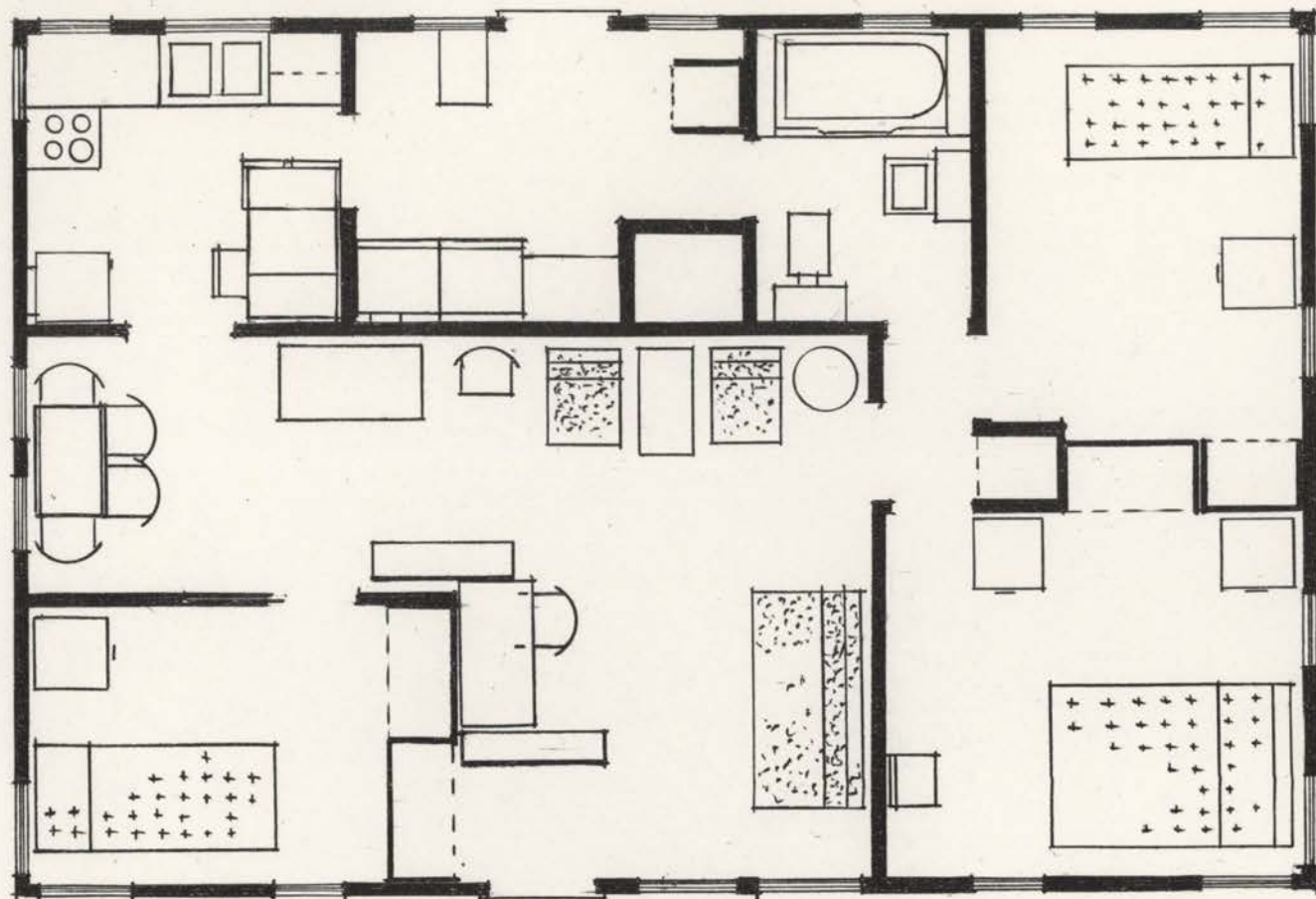
DESIRED PLAN
after living in
Plan 1-D-4



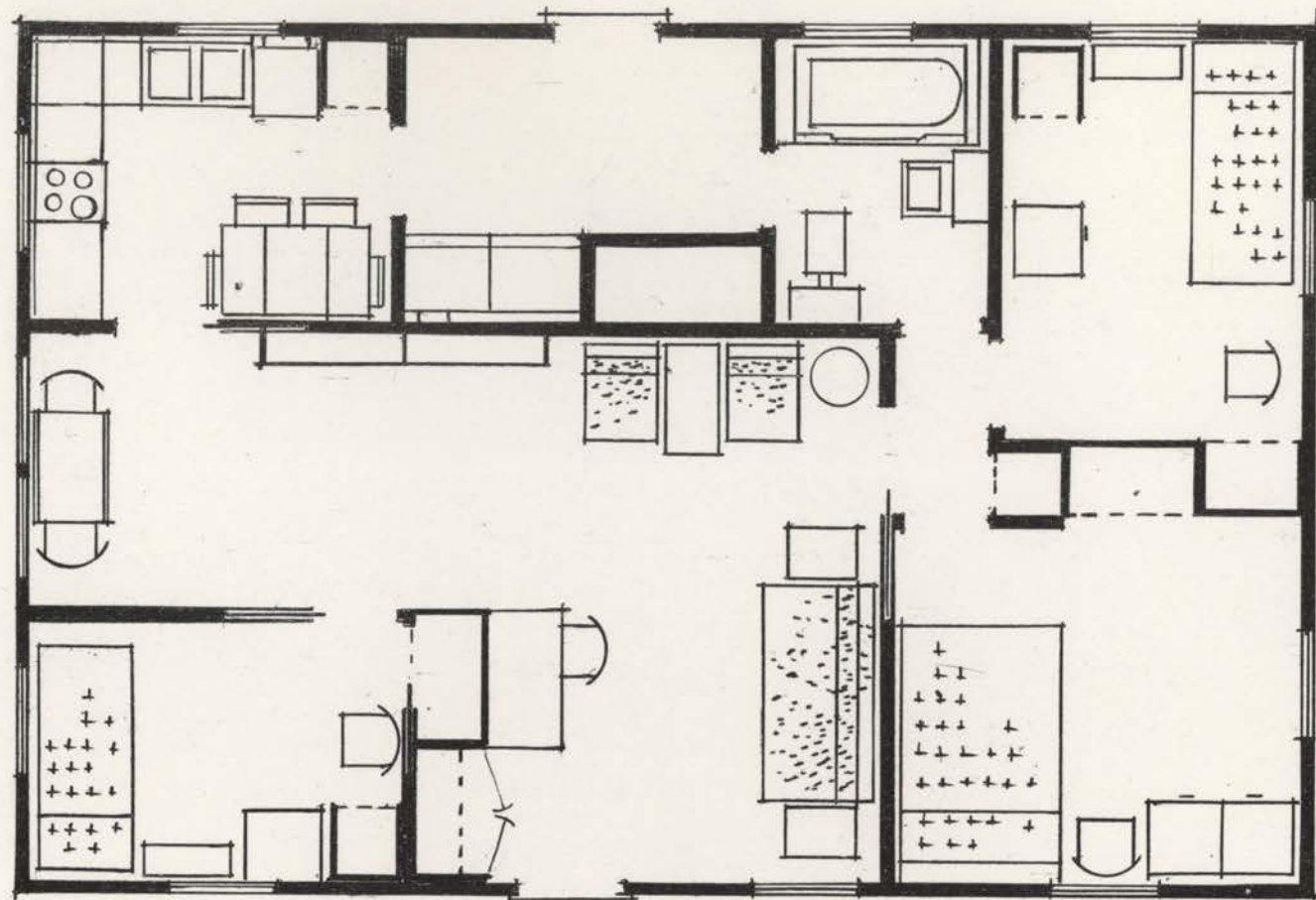
DESIRED PLAN
after living in
Plan 1-E-5



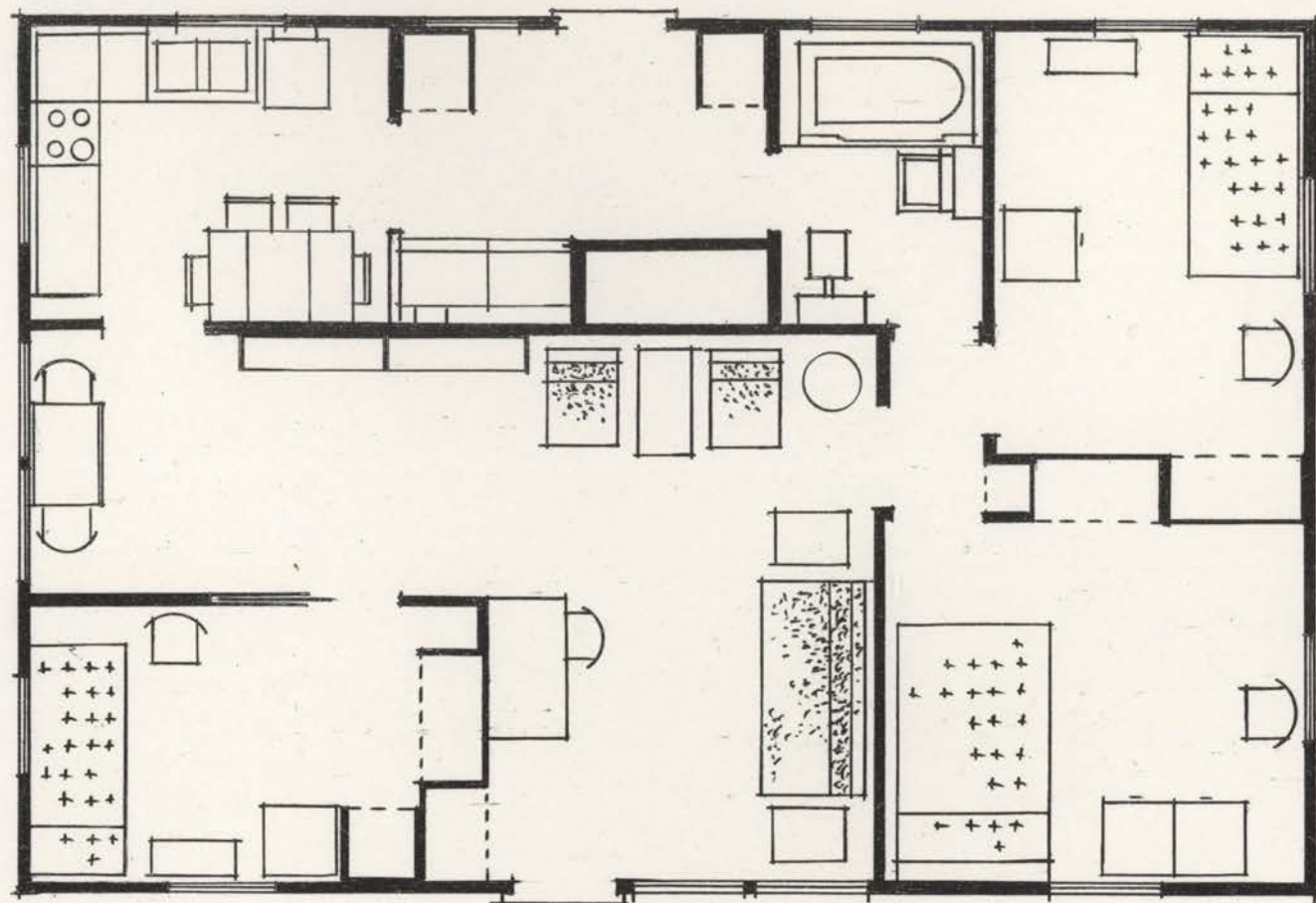
DESIRED PLAN
after living in
Plan 1-F-6



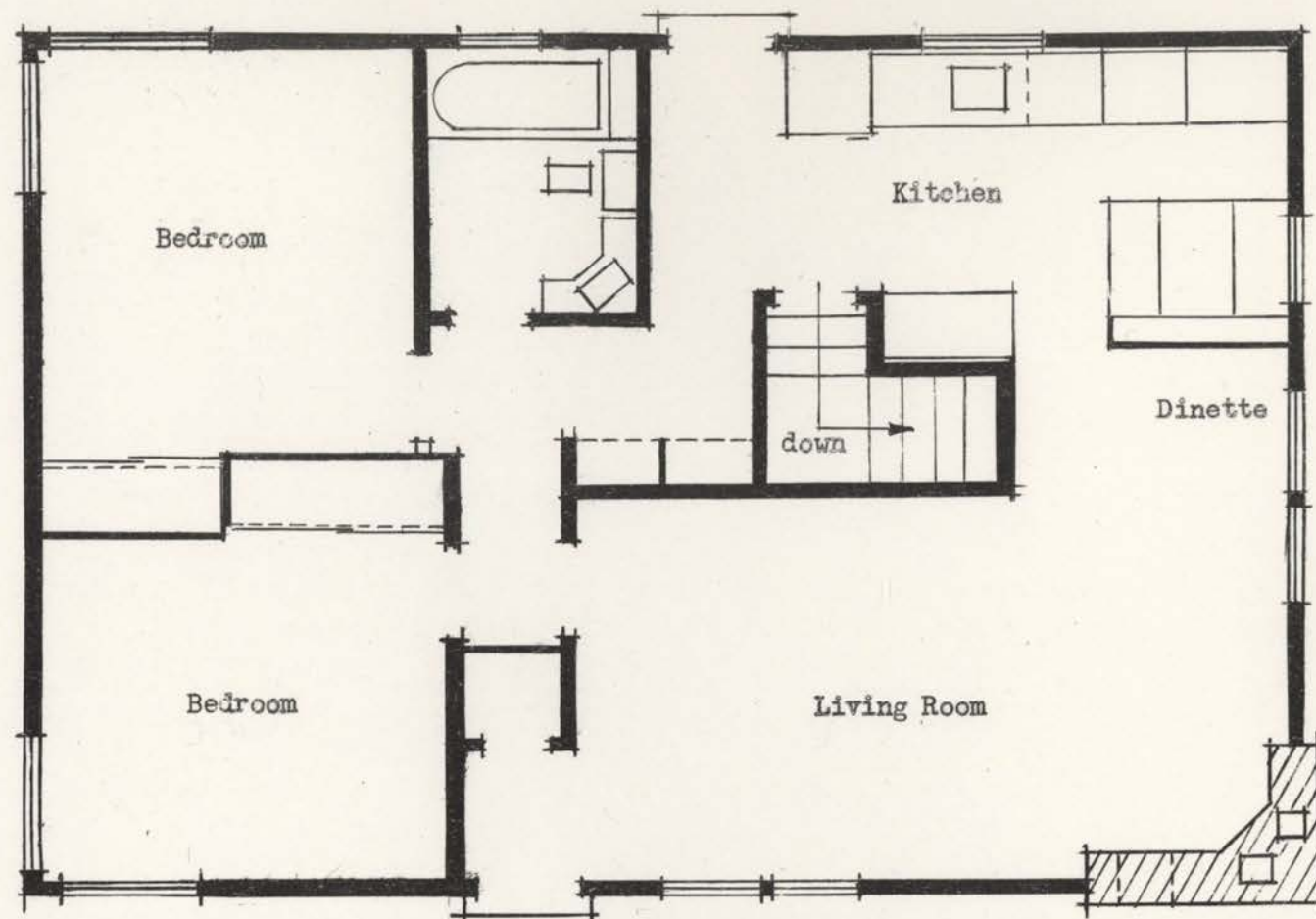
DESIRED PLAN
after living in
Plans 2-F-1 and 2-C-4



DESIRED PLAN
after living in
2-E-2



DESIRED PLAN
after living in
2-D-3



DESIRED PLAN
before and after living in
Plan 3-H-1

CONCLUSIONS

The validity of this type of research is proven by the families' change in attitude toward the use of space in the dwellings. For example, all families at one time or another stated: "We find we do not need as much space as we had thought." Similarly, preconceived ideas about the acceptability of a particular feature were, in several instances, changed after experiencing that feature.

In order to come to any conclusions on the use of space within the house that would be statistically acceptable, this study needs to be continued and expanded. Reactions of many more families to many more floor plans are needed before space standards can be established.